

## STEVENS CREEK BASIN

### 2.1 GENERAL LOCATION

Stevens Creek Basin is located on the east side of the City. Generally, Stevens Creek flows north from near Nebraska Highway 2 and 120th Street, to its confluence with Salt Creek north of US Highway 6 near Alvo Road as shown in Figure 2.1.

### 2.2 BASIN AREAS

#### 2.2.1 Main Basin

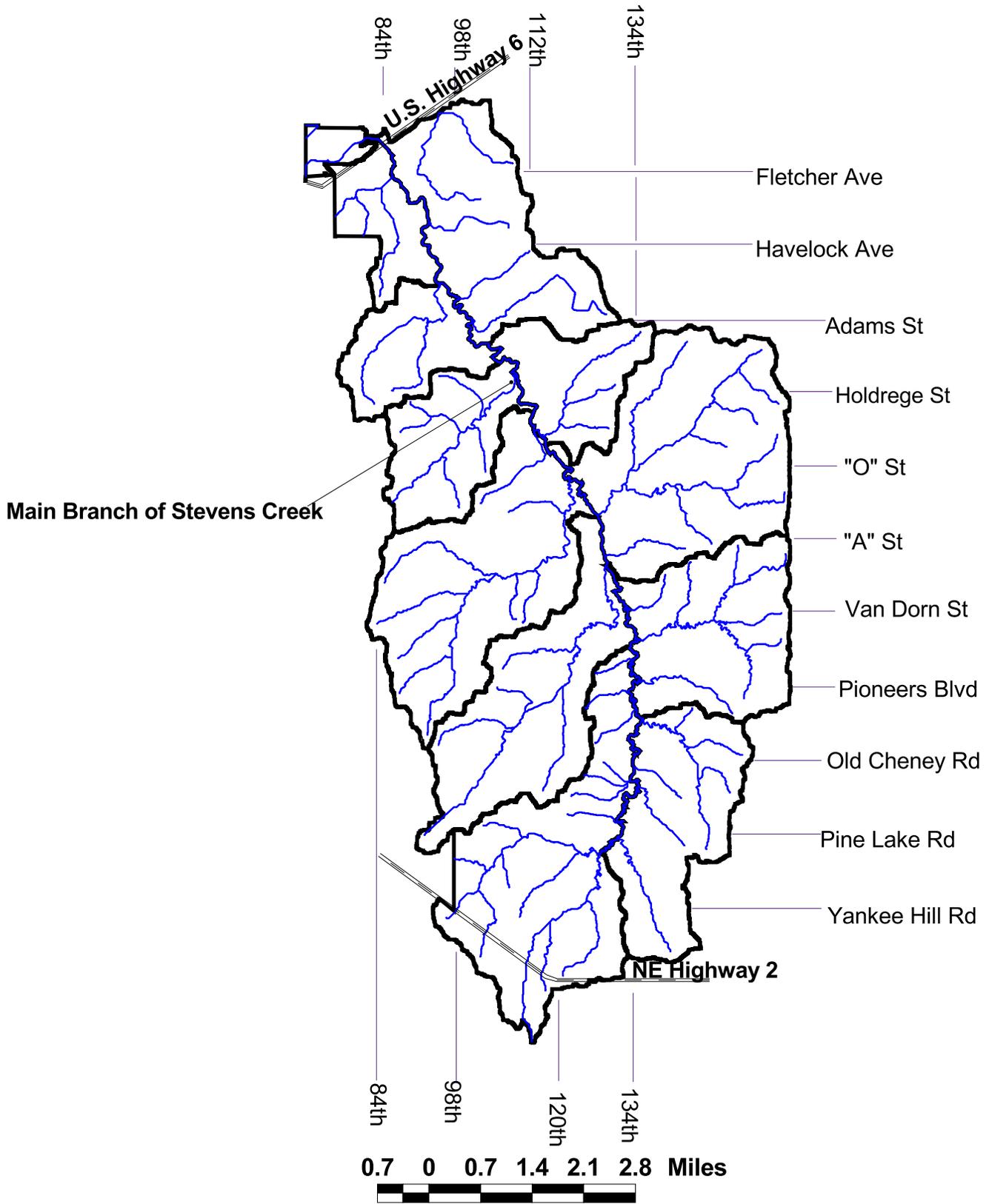
To determine the area of the Stevens Creek Basin, the total basin area was calculated using the City's GIS two-foot contour interval data using ArcView. Ridgelines were used to determine the overall basin area, and the creek location determined the east and west areas. The areas for the east and west side of the basin were then generated using ArcView. The GIS or ArcView data was then compared to existing City Planning Department areas. The results of the ArcView generated areas compared reasonably well with the Planning Departments areas as outlined in Table 2.1 below.

<b>Areas</b>	<b>Carollo Generated GIS Data</b>	<b>City Planning Department Data</b>	<b>Percent Difference</b>
Total Basin	35,189 acres	34,860 acres	0.93%
East Side	17, 879 acres	17,735 acres	0.81%
West Side	17,310 acres	17,125 acres	1.07%

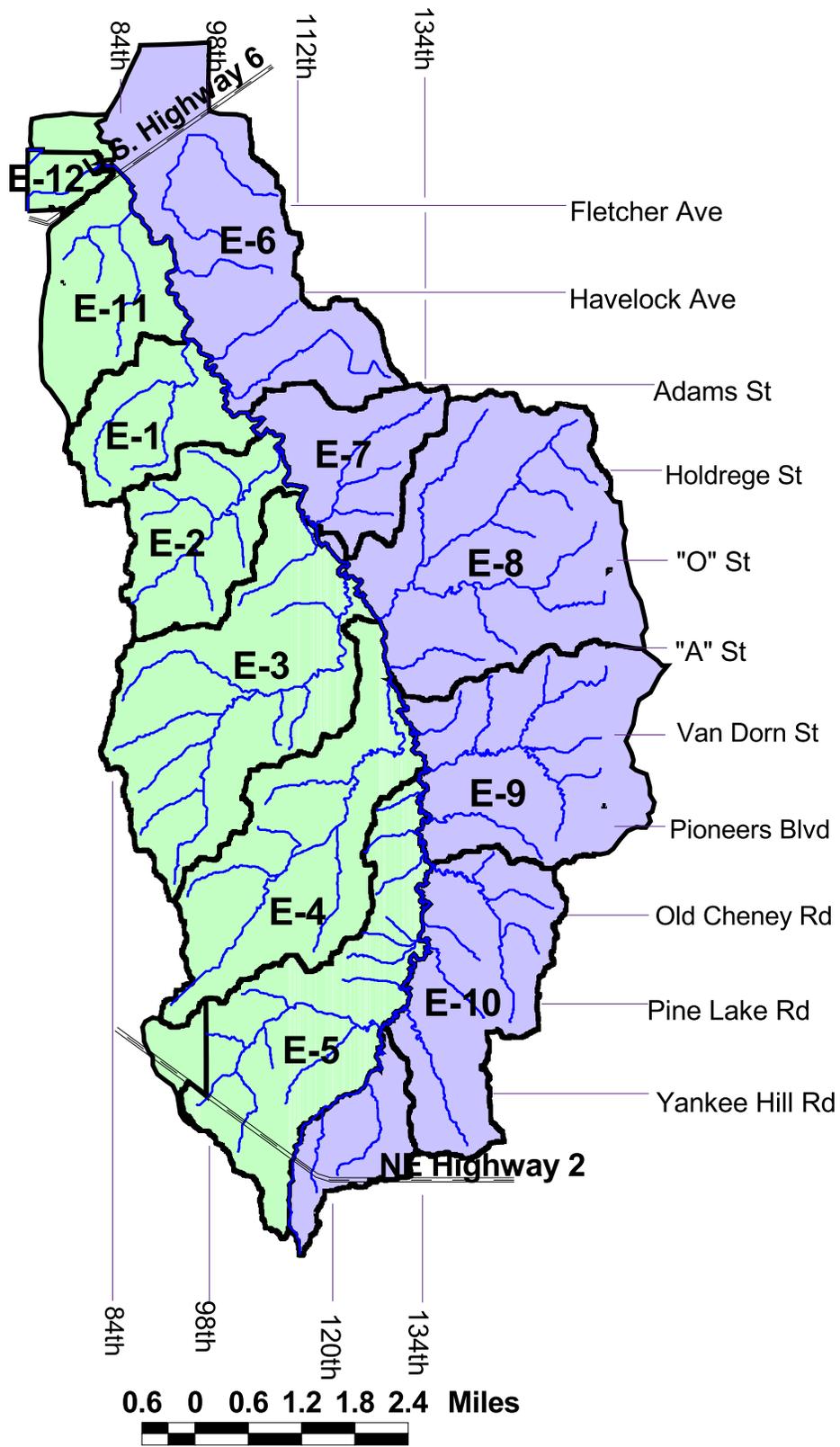
#### 2.2.2 Subbasin Areas

Stevens Creek Basin is comprised of 12 main subbasins as shown in Figure 2.2. These subbasins are located in planning tiers as previously discussed, and as summarized below.

- Tier I includes subbasins E-1, E-2, E-3, E-11 and E-12.
- Tier II includes subbasins E-4, E-5, and E-6.
- Tier III includes subbasins E-7, E-8, E-9, and E-10.



**Figure 2.1**  
**Stevens Creek Basin Watersheds**  
**and Stream Network**  
 STEVENS CREEK BASIN TRUNK SEWER  
 CITY OF LINCOLN, NEBRASKA



**Figure 2.2**  
**Subbasins**  
 STEVENS CREEK BASIN TRUNK SEWER  
 CITY OF LINCOLN, NEBRASKA

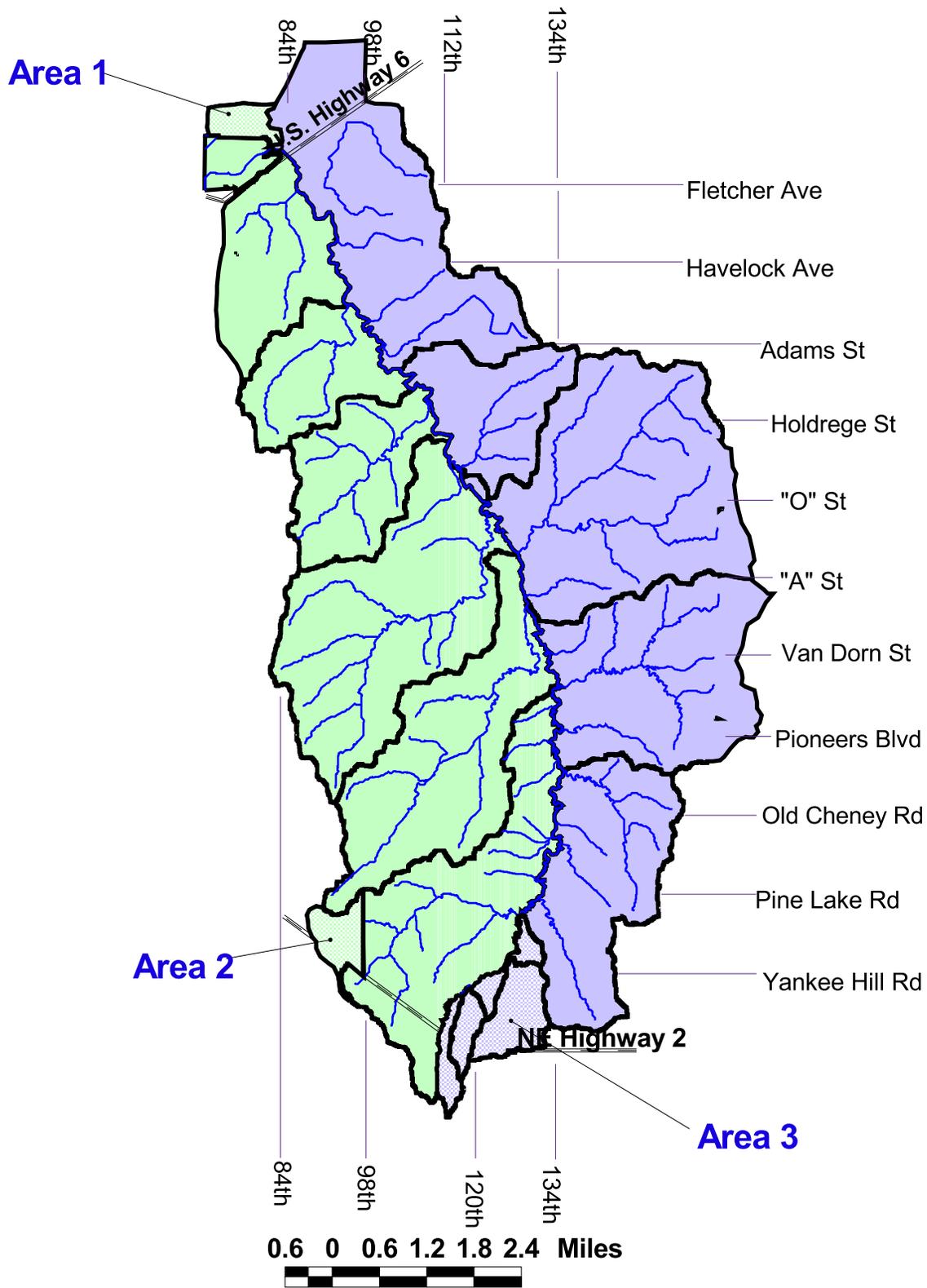
The area of the subbasins was calculated using the City's two-foot contour intervals data using an automated ArcView GIS computer model. These subbasin areas were then compared against the City Planning Department areas for the same subbasins with similar results as the main basin area as discussed above in 2.2.1.

### **2.2.3 Modified Subbasin Areas**

Prior to the modeling, three separate areas of the basin were modified from the Planning Department's data as described below and shown in Figure 2.3.

- Area 1 - 228 acres of City owned land that is located primarily north of the NE WWTP has been removed from the model as it will be served from the north by another sewer collection system.
- Area 2 - 318 acres of land has been removed from subbasin E-5 as it is currently being served by another sewer system.
- Area 3 - 1049 acres of land has been removed from subbasin E-10 (on the east side of the creek) and has been added to Subbasin E-5 located on the west side of the creek. This change has been made since the creek is very shallow and the area appears to be very easily served by the west side trunk sewer.

With the afore mentioned modifications, the total basin area included in the model is 34,641 acres, of which 17,811 acres is located on the west side of the creek and 16,830 acres is located on the east side of the creek. The floodplain areas in subbasin E-1, E-11, E-12, and E-6 were not included in the subbasin areas. Table 2.2 below outlines the subbasin areas that were adopted and used for the hydraulic modeling.



**Figure 2.3**  
**Subbasin Modifications**  
 STEVENS CREEK BASIN TRUNK SEWER  
 CITY OF LINCOLN, NEBRASKA

<b>Table 2.2 Subbasin Area Stevens Creek Basin Trunk Sewer City of Lincoln, Nebraska</b>				
<b>Subbasin Name</b>	<b>No. of Sub-Subbasins</b>	<b>Area (acres)</b>		
		<b>Minimum</b>	<b>Maximum</b>	<b>Total</b>
E-1	6	16.358	662.512	1485.024
E-2	13	23.457	455.142	1816.941
E-3	19	24.636	583.784	4405.285
E-4	12	30.523	896.149	3487.286
E-5	36	3.494	504.068	4500.472
E-6	12	14.749	948.115	4039.902
E-7	8	7.191	508.368	1603.368
E-8	22	0.057	652.677	4936.422
E-9	21	0.126	586.749	3497.710
E-10	17	0.025	933.066	2752.801
E-11	9	31.209	413.455	1790.840
E-12	2	89.730	235.593	325.323
<b>Total:</b>	<b>177</b>			<b>34641.374</b>

## **2.3 PHASED IMPLEMENTATION**

### **2.3.1 General**

For the purpose of the preliminary modeling and alternative alignment evaluations the project was divided into phases. Each phase will begin and end at a junction structure. The junction structures essentially serve as “fixed points” where the flows from the subbasins enter the trunk sewer. The subbasins which are served by a junction structure are named accordingly. In other words, Junction Structure E-1 is the point where the flows from Subbasin E-1 enter the trunk sewer. The actual locations of the junction structures and the starting and ending points for the Phases will be finalized during final design based on input from City staff and other factors that may be identified as the project develops.

### **2.3.2 West Side of Stevens Creek**

As previously identified in Technical Memorandum No. 3 (Appendix C), the west side of the Stevens Creek Basin Trunk Sewer has been divided into the following preliminary phases. The actual phasing of the construction may vary from that shown here as determined by the City as the project proceeds.

Tier I Areas (West Side of Stevens Creek):

- Phase I - NE WWTP (Existing Junction Manhole No. 1) to Fletcher Avenue (Junction Structure E-11/E-6).
- Phase II - Fletcher Avenue (Junction Structure E-11/E-6) to Murdock Trail (Junction Structure E-1), which is located approximately half way between Havelock Avenue and Adams Street.
- Phase III - Murdock Trail (Junction Structure E-1) to Holdrege Avenue (Junction Structure E-2).
- Phase IV - Holdrege Avenue (Junction Structure E-2) to near 98th and "O" Street. (Subbasin trunk sewer that will serve Subbasin E-2).
- Phase V - Holdrege Avenue (Junction Structure E-2) to just north of "A" Street (Junction Structure E-3A).

Tier II Areas (West Side of Stevens Creek):

- Phase VI - "A" Street (Junction Structure E-3A) to Van Dorn Street (Junction Structure E-4).
- Phase VII - Van Dorn Street (Junction Structure E-4) to Pioneers Blvd (Junction Structure E-5G).
- Phase VIII - Pioneers Blvd. (Junction Structure E-5G) to Pine Lake Road (Junction Structure E-5D).
- Phase IX - Pine Lake Road (Junction Structure E-5D) to Yankee Hill Road (Junction Structure E-5A).

### **2.3.3 East Side of Stevens Creek**

The east side of the creek was not divided into phases, however the Tiers and their associated subbasins are outlined below.

- Tier II Area (Subbasin E-6).
- Tier III Areas (Subbasins E-7, E-8, E-9, and E-10).