



CITY OF
ST. CHARLES
ILLINOIS • 1834

City of St. Charles Lead Service Line Replacement Comprehensive Plan

St. Charles, Illinois
Water System ID Number IL0894830

April 2024

Prepared by:

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1.0 INTRODUCTION

The City of St. Charles is developing and implementing a comprehensive plan to replace all the lead services lines in the City of St. Charles to comply with Statute 415 ILC 5/17.12. This act requires the owners and operators of a community water supply to develop, implement and maintain a comprehensive water service line material inventory as well as a comprehensive lead service line replacement plan. The purpose of this statute is to reduce the exposure of lead in the drinking water supply to all members of the community. The City of St. Charles, with Fehr Graham’s guidance, is looking to strengthen their strategic partnership with the Illinois Environmental Protection Agency’s Public Water Supply Loan Program and further continue advancements in replacing the City’s lead service line inventory. This comprehensive, multi-year project plan will detail the City’s directed strategy by initially targeting high-risk facilities for lead service line replacement. This plan will detail how the City proposes to tackle the proposed high-risk facilities and then choose which areas get priority on the lead service replacement schedule based on the eight (8) census tract metrics - median household income (MHI), children under six (6) years old, poverty, unemployment, social security, state supplemental income, lead service line inventory percentage, and pre-1990 construction. By assigning a criticality level to each metric, the City will structure a yearly phased program to prioritize the areas of greatest need to replace lead service lines.

2.0 BACKGROUND

The City of St. Charles is located 40 miles west of Chicago in DuPage and Kane Counties. St. Charles has a total area of 15.01 square miles, of which 14.14 square miles is land and 0.60 square miles is water. The Fox River runs through downtown. The site location is illustrated in Exhibit 1. According to the most recent available census data (2022), St. Charles has a population of 33,081. The median household income in the city is \$102,414 compared to the state median household income of \$72,563. The per capita income for the city is \$50,467, with 3.3% of the population below the poverty line (census.gov), compared to the state per capita income of \$39,571 with 11.9% below the poverty line (census.gov).

Table 1: Census Population

City of St. Charles

Year	Population
1990	22,501
2000	27,896
2010	32,974
2020	33,081

The City of St. Charles Water Department identification number for the community water supply is IL0894830. The total number of water service lines connected to the distribution system of the community water supply is approximately 12,798 water customers. The Water Department has a total number of known lead service lines connected to the distribution system of the community water supply of approximately 4,726.

The City started replacing lead service lines in 2022.

Table 2: LSLR Historical Cost

City of St. Charles

	Phase 1 - 2022	Phase 2 - 2023
Total Expenditures	\$100,000	\$150,000
Properties Completed	2	5
Avg. Price / Property*	\$10,000	\$15,000

*Price includes engineering and survey work

Table 3 below shows the lead service line replacement schedule along with the number of proposed priority high-risk facilities to be completed. Per Illinois Statute 415 ILCS 5/17.12 (v) and the population metric in Table 1, St. Charles falls under the replacement completion goal of a rate of 3% per year within a timeline of 30 years. To attain the Statute’s 3% rate of completion on the current inventory of 4,726 properties needing their lead service line replaced, the contractor will need to increase to at least 233 properties completed per year/phase initially. With particular preference for proposed high-risk and disadvantaged properties identified by the referenced 8 census metrics, the City’s achievement of this goal is summarized in Table 3.

Table 3: Proposed Lead Service Line Replacement Schedule

City of St. Charles

Year - Phase	Census Tract - Quantity	Census Tract - Quantity	Census Tract - Quantity
2024 - PH3	WM/Leaking - 10		
2025 - PH4	WM/Leaking - 20	City Funded - 25	
2026 - PH5	WM/Leaking - 20	High Risk - 107	8520.02 - 93
2027 - PH6	8520.02 - 233		
2028 - PH7	8520.02 - 233		
2029 - PH8	8520.02 - 233		
2030 - PH9	8520.02 - 233		
2031 - PH10	8520.02 - 233		
2032 - PH11	8520.02 - 59	8522.01 - 174	
2033 - PH12	8522.01 - 233		
2034 - PH13	8522.01 - 233		
2035 - PH14	8522.01 - 233		
2036 - PH15	8522.01 - 233		
2037 - PH16	8522.01 - 36	8520.01 - 10	8522.03 - 187
2038 - PH17	8522.03 - 233		
2039 - PH18	8522.03 - 233		
2040 - PH19	8522.03 - 79	8521.03 - 154	
2041 - PH20	8521.03 - 86	8522.04 - 4	8523 - 143
2042 - PH21	8523 - 233		
2043 - PH22	8523 - 233		

Year - Phase	Census Tract - Quantity	Census Tract - Quantity	Census Tract - Quantity
2044 - PH23	8523 - 6	8520.04 - 2	8520.05 - 225
2045 - PH24	8520.05 - 233		
2046 - PH25	8520.05 - 24		

The City of St. Charles is preparing to ramp up its service line replacement work in the coming years/phases. The current focus on leaking service lines and water main replacement work will be the City’s priority over the next 2-3 fiscal years. Once this work is completed, the City’s goal is to prioritize and replace lead service lines in all the proposed high-risk facilities in the next phase. Once all proposed high-risk facilities are completed, the City will start with the properties that fall within the city census sector reporting the greatest amount of the 8 census tract metrics and work their way down the census tract metrics to finish with the city census sector that meets the least amount of the 8 census tract metrics. The proposed order of importance of the 8 census metrics is as follows: Median Income > Children Under 6 > Poverty > Social Security > Unemployment > Pre-1990 Homes > State Supplemental Income > Lead Service Line Replacement percentage complete. See Exhibit 2: City of St. Charles Census Metrics.

The City plans to target the greatest need sector first: 8520.02 because it falls within the greatest amount of the target census metrics poverty, median household income, children under 6 years old, social security index, unemployment, built pre-1990 and LSLR%. This sector contains approximately 1,317 lead service lines (from City of St. Charles data) and will take approximately 5 years to complete at the required 3% rate. From there, we will move to the second greatest need sector: 8522.01 because it falls within the second most amount of the target metrics. This sector contains approximately 1,142 lead service lines (from City of St. Charles data) and will take approximately 4 years to complete at the required 3% rate. We will continue to target the areas with properties in the greatest need of lead service line replacement until we have verified that 100% of the target areas are free of lead service lines.

3.0 COST ANALYSIS

The Lead Service Line Replacement Plan will be funded by a loan from the Illinois Environmental Protection Agency Public Water Supply Loan Program (PWSLP) from the Bureau of Water Infrastructure Financial Assistance Section, in addition to the City’s capital expenditure work. Annual loan amounts given to selected recipients may be limited by the status of the fund, capitalization grant amounts, economic conditions, and requirements established by the USEPA. The loan amount forgiven is variable and dependent on USEPA requirements, the terms of the LSLR Capitalization Grant Agreement, the SDWA, the BIL Act, economic conditions, the status of the PWSLP Fund, and other relevant criteria.

In its latest draft guidance, loans are proposed to be approved at a fixed 0% interest rate for a standard term that cannot exceed the lesser of 30 years beyond the initiation of operation date, 30 years beyond the initiation of the loan repayment period, or the projected useful life of the lead service line replacement project. This term is extended to 40 years for a community designated as “disadvantaged” (city MHI less than 100% of the Illinois state MHI) under the same repayment criteria. The funds are designated for the service line replacement work, with any amount above the \$4,000,000 needed to be funded by the City of St. Charles. The funds cover both the public and the private sides of the projected work.

The City will implement a plan, based on the up-to-date lead service line inventory, to target all high-risk facilities in the first year. Schools, parks, group homes, hospitals and daycare facilities are included in this category. A map of these high-risk facilities is provided in Exhibit 3. Once the high-risk facilities are completed, the City will utilize the census tract metrics to systematically target the areas overlapping all 8 census metrics in descending order until all lead service lines in the city have been replaced. An outline of this plan is included in Exhibit 2 Census Tract Metrics. In addition to service line replacement work done under the PWSLP, the City of St. Charles has undertaken its replacement service work within its capital expenditure plan. The City is committed to the continued partnership of replacing lead service lines for the betterment of the community.

Since the funding for the project work will come from the PWSLP and City capital expenditures, the City is not anticipating any affordability issues for ratepayers. There is no intention of sharing project costs with customers for lead service line replacement. The typical expected cost for a lead service line replacement is summarized in Exhibit 13. The typical procedure for replacing a lead service line is profiled in Exhibit 14. Once the line is replaced, it needs to be flushed of any further contaminated water. The replaced line flushing procedure is outlined in Exhibit 12. In the following table, the City has presented a cost projection to complete replacement of all lead service lines in the community.

Table 4: Projected Cost Amount
City of St. Charles

Year - Phase	PWSLP Cost	Loan Amount	City Capital Expenditure	City Cost
2024 - PH3	\$ -	\$ -	\$150,000.00	\$150,000.00
2025 - PH4	\$ -	\$ -	\$675,000.00	\$675,000.00
2026 - PH5	\$3,000,000.00	\$4,000,000.00	\$300,000.00	\$3,300,000.00
2027 - PH6	\$3,150,000.00	\$4,000,000.00	\$345,000.00	\$3,495,000.00
2028 - PH7	\$3,150,000.00	\$4,000,000.00	\$345,000.00	\$3,495,000.00
2029 - PH8	\$3,150,000.00	\$4,000,000.00	\$345,000.00	\$3,495,000.00
2030 - PH9	\$3,150,000.00	\$4,000,000.00	\$345,000.00	\$3,495,000.00
2031 - PH10	\$3,150,000.00	\$4,000,000.00	\$345,000.00	\$3,495,000.00
2032 - PH11	\$3,150,000.00	\$4,000,000.00	\$345,000.00	\$3,495,000.00
2033 - PH12	\$3,150,000.00	\$4,000,000.00	\$345,000.00	\$3,495,000.00
2034 - PH13	\$3,150,000.00	\$4,000,000.00	\$345,000.00	\$3,495,000.00
2035 - PH14	\$3,150,000.00	\$4,000,000.00	\$345,000.00	\$3,495,000.00
2036 - PH15	\$3,150,000.00	\$4,000,000.00	\$345,000.00	\$3,495,000.00
2037 - PH16	\$3,150,000.00	\$4,000,000.00	\$345,000.00	\$3,495,000.00
2038 - PH17	\$3,150,000.00	\$4,000,000.00	\$345,000.00	\$3,495,000.00
2039 - PH18	\$3,150,000.00	\$4,000,000.00	\$345,000.00	\$3,495,000.00
2040 - PH19	\$3,150,000.00	\$4,000,000.00	\$345,000.00	\$3,495,000.00
2041 - PH20	\$3,150,000.00	\$4,000,000.00	\$345,000.00	\$3,495,000.00
2042 - PH21	\$3,150,000.00	\$4,000,000.00	\$345,000.00	\$3,495,000.00
2043 - PH22	\$3,150,000.00	\$4,000,000.00	\$345,000.00	\$3,495,000.00

Year - Phase	PWSLP Cost	Loan Amount	City Capital Expenditure	City Cost
2044 - PH23	\$3,150,000.00	\$4,000,000.00	\$345,000.00	\$3,495,000.00
2045 - PH24	\$3,150,000.00	\$4,000,000.00	\$345,000.00	\$3,495,000.00
2046 - PH25	\$ -	\$ -	\$360,000.00	\$360,000.00

4.0 DATA ANALYSIS

The census tract metrics data was collected from the Census website (Source: censusdata.gov) for St. Charles, Illinois and mapped in QGIS. Each census tract metric was mapped and is provided in the following exhibits: Exhibit 4 - Median Household Income, Exhibit 5 - Children Under 6 Years Old, Exhibit 6 - Poverty, Exhibit 7 – Unemployment, Exhibit 8 – Social Security Index, Exhibit 9 – Lead Service Line Inventory Replacement Percentage, Exhibit 10 – Pre-1990 Construction, and Exhibit 11 – State Supplemental Security Income. These census tracts are then applied to the most recent lead service line inventory data. As the inventory quantifies where and how many service lines need replacement, the census tracts qualify which lead service lines (including unknown or suspected lead service lines) need replacement in a specified order. By overlapping the census tracts, the City can obtain a clear view of the need for replacement and create a processing schedule on which to base the replacement work. Over the next several years, the City plans to insert this replacement work into the City’s own ongoing schedule of leaking service line and water main replacement work.

During the past lead service line replacement phases, the City of St. Charles Water Department notified city residents through community announcements and direct contact with property owners. For future phases, the City will work in tandem with Fehr Graham to further announce and educate residents about the replacement program on the City’s website, social media, and the local newspaper. In addition, the future plan includes leaving door hangers on the homes in the current targeted area. Included in the door hangers is information related to the lead service line replacement program as well as information on the dangers of being on a lead water service line. Along with the informative documents is all the paperwork needed to register for the program. Furthermore, a mailing may be used to send the same documents to the billing address of each property to increase the number of responses. The City of St. Charles, in conjunction with Fehr Graham, will host a community pre-construction meeting with homeowners to inform them about the construction schedule and answer questions.

The City of St. Charles will work diligently to select a contractor that meets the requirements of Section 2 of the Business Enterprise for Minorities, Women, and Persons with Disabilities Act. The City will work with the contractor and vendors to ensure good-faith efforts are used. Contracts will represent at least 11% of the total of the projects awarded to minority-owned businesses as defined in Section 2. Contracts representing at least 7% of the total projects shall be awarded to women-owned businesses, as defined in Section 2 and contracts representing at least 2% of the total projects shall be awarded to businesses owned by persons with a disability.

In the following table, the City has presented a lead service line replacement schedule to complete replacing all lead service lines in the community. Using current IEPA guidelines, the City plans to complete replacements at a rate of 3% per year. The total number of lines replaced also includes the City capital expenditure work outside the lead service line replacement program. The total cost of each year is calculated based on an average property cost of \$15,000, the current IEPA loan program amount of \$4,000,000, and includes the City's capital expenditure program total of \$350,000. The loan program and capital expenditure program amounts will vary and are based on data from the most current phase of the existing program.

Table 5: Projected Lead Service Schedule

City of St. Charles

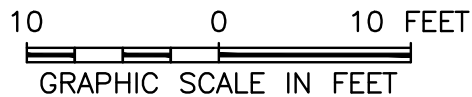
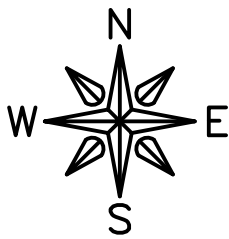
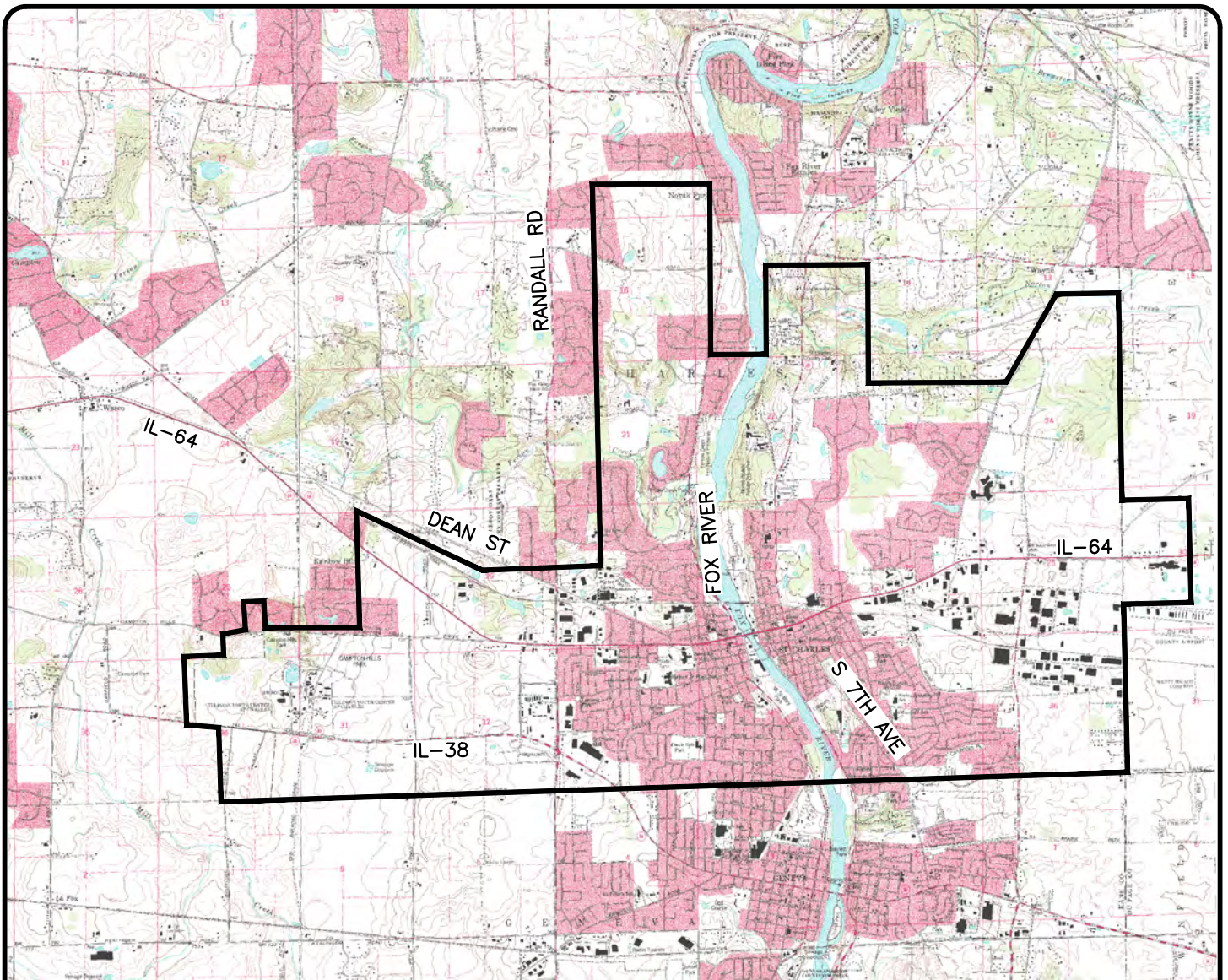
Year - Phase	Total LSL Replacement Need	LSL PWSLP Replaced	LSL City Replaced	LSL Replaced Total	LSL Inventory Replacement Percentage
2024 - PH3	4,726	0	10	10	0.2%
2025 - PH4	4,716	0	45	45	1.0%
2026 - PH5	4,671	200	20	220	4.7%
2027 - PH6	4,451	210	23	233	5.2%
2028 - PH7	4,218	210	23	233	5.5%
2029 - PH8	3,985	210	23	233	5.8%
2030 - PH9	3,752	210	23	233	6.2%
2031 - PH10	3,519	210	23	233	6.6%
2032 - PH11	3,286	210	23	233	7.1%
2033 - PH12	3,053	210	23	233	7.6%
2034 - PH13	2,820	210	23	233	8.3%
2035 - PH14	2,587	210	23	233	9.0%
2036 - PH15	2,354	210	23	233	9.9%
2037 - PH16	2,121	210	23	233	11.0%
2038 - PH17	1,888	210	23	233	12.3%
2039 - PH18	1,655	210	23	233	14.1%
2040 - PH19	1,422	210	23	233	16.4%
2041 - PH20	1,189	210	23	233	19.6%
2042 - PH21	956	210	23	233	24.4%
2043 - PH22	723	210	23	233	32.2%
2044 - PH23	490	210	23	233	47.6%
2045 - PH24	257	210	23	233	90.7%
2046 - PH25	24	0	24	24	100.0%

5.0 CONCLUSION

The City of St. Charles is committed to its partnership with the IEPA's PWSLP in systematically replacing all lead service lines in the City and this comprehensive plan outlines how the City is planning to ensure this happens in the next 30 years. There are 4,726 lead service lines in the City of St. Charles, of which 107 are high-risk facilities. With an initial focus on leaky lead service lines and water main replacement work, the City will then propose a lead service line targeting methodology utilizing census tract metrics to concentrate and prioritize replacement work in the areas with the highest disadvantaged needs. The City is dedicated to completing lead service line elimination, as evidenced by its continued capital expenditure.

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Exhibit 1
Site Location Map



SITE LOCATION MAP

LSLR COMPREHENSIVE PLAN

CITY OF ST. CHARLES

ST. CHARLES, ILLINOIS

10/3/2023

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Exhibit 2

**City of St. Charles Census Metrics
with Metric Heat Map**

CITY OF ST. CHARLES CENSUS METRICS

Geographic Area Name	Median Household Income	Score	Children Under 6 Years Old	Score	Poverty %	Score	Unemployment %	Score	Social Security %	Score	LSLR %	Score	Supplemental Security Income %	Score	Built Pre-1990	Score	Total Score	Confirmed Lead Service Lines
Census Tract 8520.02, Kane County, Illinois	\$ 97,192.00	0	7%	80	1.1%	0	1.30%	15	22%	35	<1%	0	2.1%	20	73%	45	195	1317
Census Tract 8522.01, Kane County, Illinois	\$ 79,228.00	0	5%	70	8.1%	30	N/A	0	N/A	0	0%	0	4.4%	45	79%	45	190	1142
Census Tract 8413.12, DuPage County, Illinois	\$ 64,167.00	0	9%	80	21.8%	45	N/A	0	N/A	0	0%	0	2.5%	25	52%	35	185	0
Census Tract 8520.01, Kane County, Illinois	\$ 88,980.00	0	6%	80	6.6%	25	N/A	0	N/A	0	0%	0	3.5%	35	71%	45	185	10
Census Tract 8522.03, Kane County, Illinois	\$ 81,035.00	0	9%	80	4.9%	20	N/A	0	N/A	0	<1%	0	3.1%	30	66%	45	175	732
Census Tract 8521.01, Kane County, Illinois	\$ 175,018.00	0	4%	50	4.3%	15	3.60%	40	21%	35	0%	0	1.3%	10	20%	10	160	0
Census Tract 8413.13, DuPage County, Illinois	\$ 83,679.00	0	6%	80	3.3%	10	N/A	0	N/A	0	0%	0	0.2%	0	57%	35	125	0
Census Tract 8521.03, Kane County, Illinois	\$ 162,647.00	0	7%	80	2.2%	5	N/A	0	N/A	0	0%	0	0.4%	0	57%	35	120	240
Census Tract 8522.04, Kane County, Illinois	\$ 133,309.00	0	7%	80	1.3%	5	N/A	0	N/A	0	0%	0	1.1%	10	25%	15	110	4
Census Tract 8413.10, DuPage County, Illinois	\$ 174,766.00	0	5%	70	0.5%	0	N/A	0	N/A	0	0%	0	3.0%	30	12%	5	105	0
Census Tract 8523, Kane County, Illinois	\$ 599,962.00	0	3%	30	7.1%	30	N/A	0	N/A	0	<1%	0	0.0%	0	64%	40	100	615
Census Tract 8520.04, Kane County, Illinois	\$ 142,788.00	0	2%	20	3.4%	10	N/A	0	N/A	0	0%	0	3.9%	40	15%	5	75	2
Census Tract 8520.05, Kane County, Illinois	\$ 136,411.00	0	2%	20	2.8%	10	N/A	0	N/A	0	0%	0	0.6%	5	60%	40	75	664

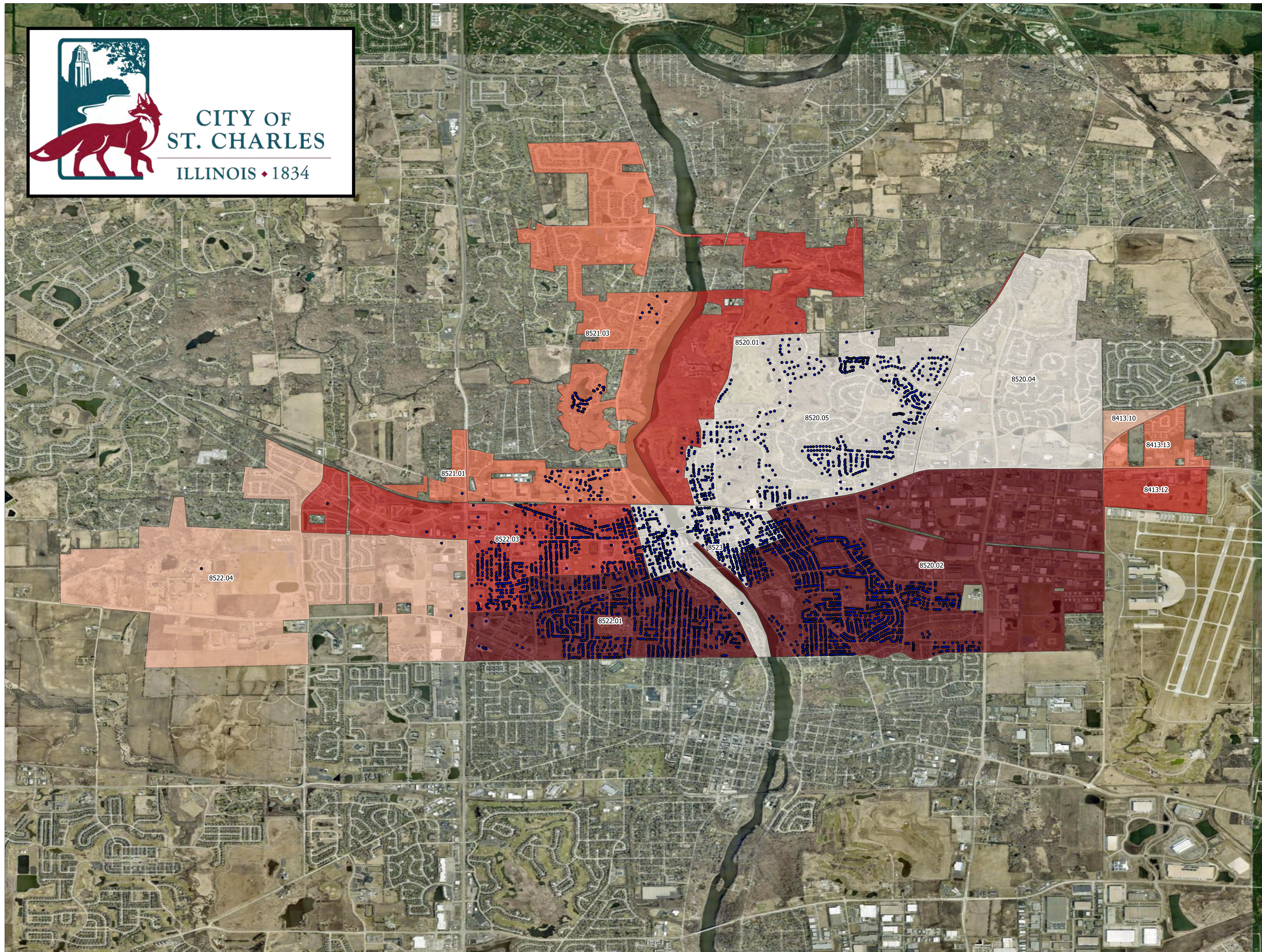
EXHIBIT 2 CITY OF ST. CHARLES CENSUS METRICS

4/9/2024



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Census Tract Heat Map

Heat Map Total Score with Confirmed Lead Services Lines

● Confirmed Lead Service Line

Census Tracts Total Scores Range:

- 75 - 102
- 102 - 118
- 118 - 163
- 163 - 185
- 185 - 195

ESRI Imagery

Exhibit Information

City of St. Charles
Project No.: 22-818 Phase 10
Date: April 9, 2024
Prepared By: M. Ripalda

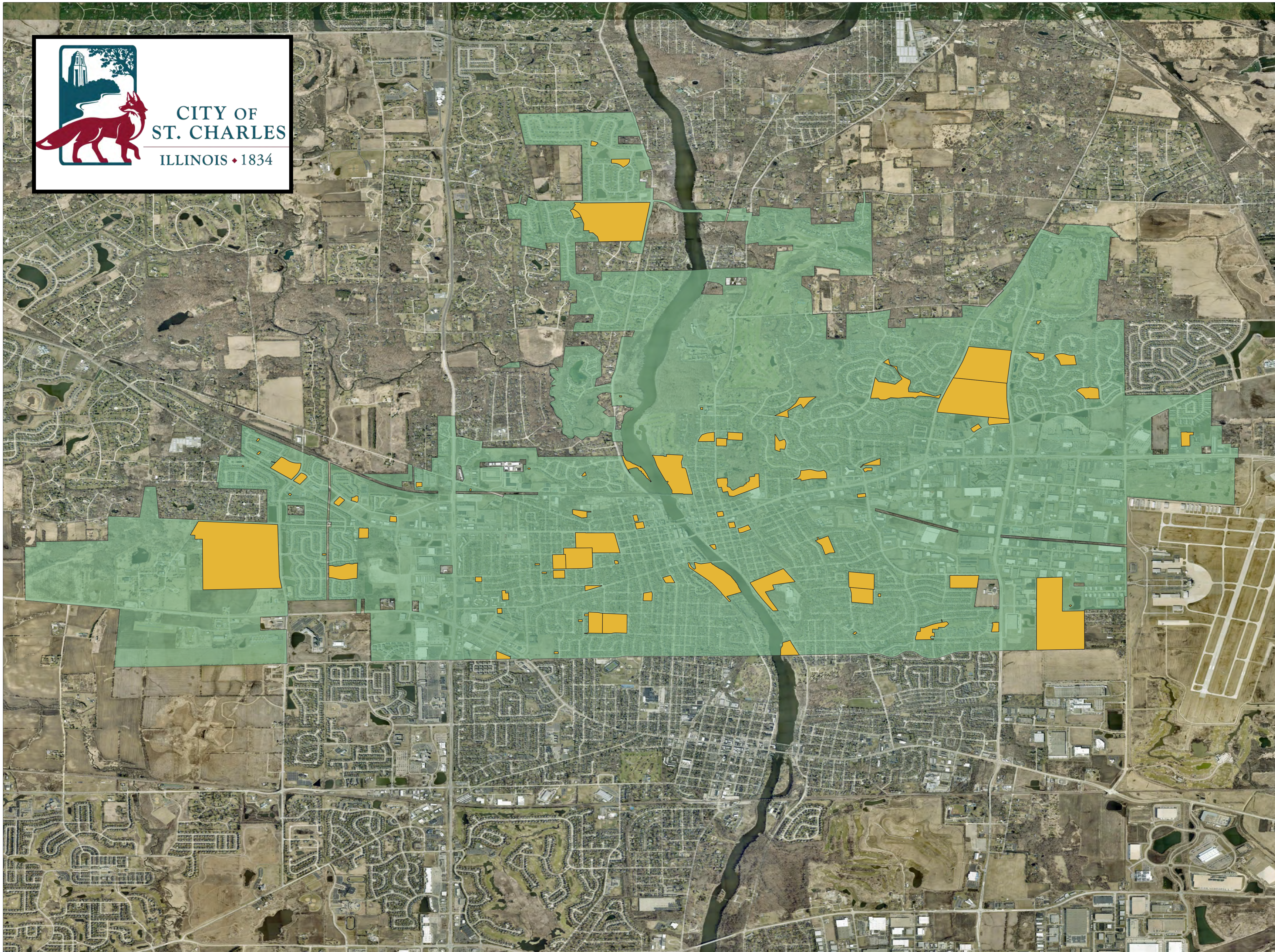
Reference

Imagery: ESRI Imagery
Subbasins: Produced with Census Data
Mapping: Created with QGIS



Exhibit 3

Maps and Lists of Addresses of High-Risk Facilities



High-Risk Facilities

- High-Risk Facilities Locations
- St. Charles Boundary

ESRI Imagery

Exhibit Information

City of St. Charles
Project No.: 22-818 Phase 10
Date: April 8, 2024
Prepared By: M. Ripalda

Reference
Imagery: ESRI Imagery
Subbasins: Produced with Census Data
Mapping: Created with QGIS



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PRE-SCHOOL/DAYCARE CENTERS

Name	Address
Chesterbrook Academy Pre-school	600 Courtyard Drive
Primrose School of St. Charles West	1940 Bricher Road
St. Charles KinderCare	1875 Prairie Street
Children of American St. Charles	155 S. Tyler Road
Everbrook Academy of St. Charles	3090 W. Main Street
The Goddards School of Saint Charles (Geneva)	200 N. Tyler Road
Kiddie Academy of St. Charles	2651 Woodward Drive
Bethlehem Preschool Center	1145 N. 5th Avenue
First Steps Preschool	1125 Oak Street
St. Mark's Preschool	101 S. 6th Avenue
Fox Ridge Early Childhood Center	1905 E. Tyler Road
Davis Primary School	1125 S. 7th Street
St. Patrick Catholic Preschool	118 N. 5th Street
Kensington School	1776 W. State Street
Richmond Intermediate School	300 S. 12th Street
Lincoln Elementary School	211 S. 6th Avenue

4/9/2024



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PRE-SCHOOL/DAYCARE CENTERS

Munhall Elementry School	1400 S 13th Ave
Wredling Elementry School	1200 Dunham Rd
Kinder Care Learning Center School	1875 Prairie Street
Made-Johnstone Center School	1304 Ronzheimer Ave
Bridges Montessori	716 Oak Street
Kids Connection	2011 Dean Street Suite A
Home Daycare	306 Valley View Dr.
Home Daycare	3610 Provence Dr.
Home Daycare	3525 Antoine Pl.
Home Daycare	325 S. 13th St.
Home Daycare	406 S. 13th St.
Home Daycare	1431 S. 12th St.
Home Daycare	1125 S. 10th St.
Home Daycare	1108 S. 10th St.
Home Daycare	1733 Pleasant Ave.
Home Daycare	1508 Jobe Ave.
Home Daycare	2602 Turnberry Rd.
Home Daycare	118 Lewis Ct.



4/9/2024

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PARKS/PLAYGROUNDS

Name	Address
Kehoe Park	8 North Avenue
Pottawatomie Park	8 North Avenue
Davis Primary Playground	708 - 730 Fellows Street
Mount Saint Mary Park	Prairie Street, east of Route 31
Davis School Park	450 W. Main Street
Delnor Woods Park	Wing Avenue
Langum Park	50 Devereaux Way
Ferson Creek park	State Route 31, east of Wildrose Springs Drive
Majestic Oaks Park	Majestic Oaks Dr. at Majestic Oaks Lane
Red Gate Park	Greenwood Lane, south of Red Gate Road
Belgium Town Park	229 N. 9th Street
Harvest Hills Park	Heritage Street at Langston Circle
James O. Breen Community Park	Compton Hills and Peck Road
Timber Trails Park	North end of N. 17th Street (South Entrance) & Off Manley Rd (East Entrance)
Artesian Springs Park	St. Germain's Place, west of Renaux Blvd
Hickory Knolls Discovery Center	3795 Campton Hills Drive



4/9/2024

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PARKS/PLAYGROUNDS

Renaux Manor Park	State Route 64 and Peck Road
Otter Cove Aquatic Park	3615 Campton Hills Road
Woodward Drive Playground	Regency Court East off Woodward Drive
Fairview Park	Oak Street and S. 19th Street
Baker Field Park	Cutler Street and S. 5th Street
Moody Park	Moody Street and S. 3rd Street
Hazletine Park	S. Riverside Avenue and Ohio Avenue
Hunt Club Park	Persimmon Dr. between Wing Ave. and Hunt Club Dr.
Surrey Hill Park	N. Tyler Road by Wing Lane
Fox Chase Park	Fox Chase Boulevard at Hawkins Court
Charlemagne/Kingswood Park	Indian Way and Osbow Lane
Riverside Pak	State Route 25 and Division Street
Boy Scouts Island	State Route 31 at River Drive
Rotary Park	Adams Ave. at S. 13th Ave.
River's Edge / Reserve Park	Prairie Crossing Dr. between Meadow View Dr. and Reserve Dr.
Cambridge Park	End of Cumberland Green Drive
Lincoln Park	Main Street between 4th Street and 5th Street



CITY OF
ST. CHARLES
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4/9/2024

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ILLINOIS DESIGN FIRM NO. 184-003525

ILLINOIS
IOWA
WISCONSIN

PLOT DATE: 4/9/24

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CLINICS/HOSPITALS

Name	Address
Northwestern Medicine Immediate Care St. Charles	2900 Foxfield Road STE 100
Northwestern Medicine Behavioral Health Services St. Charles	964 N. 5th Avenue
Northwestern Medicine Family Medicine	2015 Dean Street STE 2
Bickford	2875 Campton Hills Rd.
Autumn Leaves	10 Peck Rd.
River Glen	975 N. 5th Ave.
The Grove	611 Allen Lane
Silverado	4058 E. Main St.



CITY OF
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4/9/2024

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ENGINEERING & ENVIRONMENTAL

ILLINOIS DESIGN FIRM NO. 184-003525

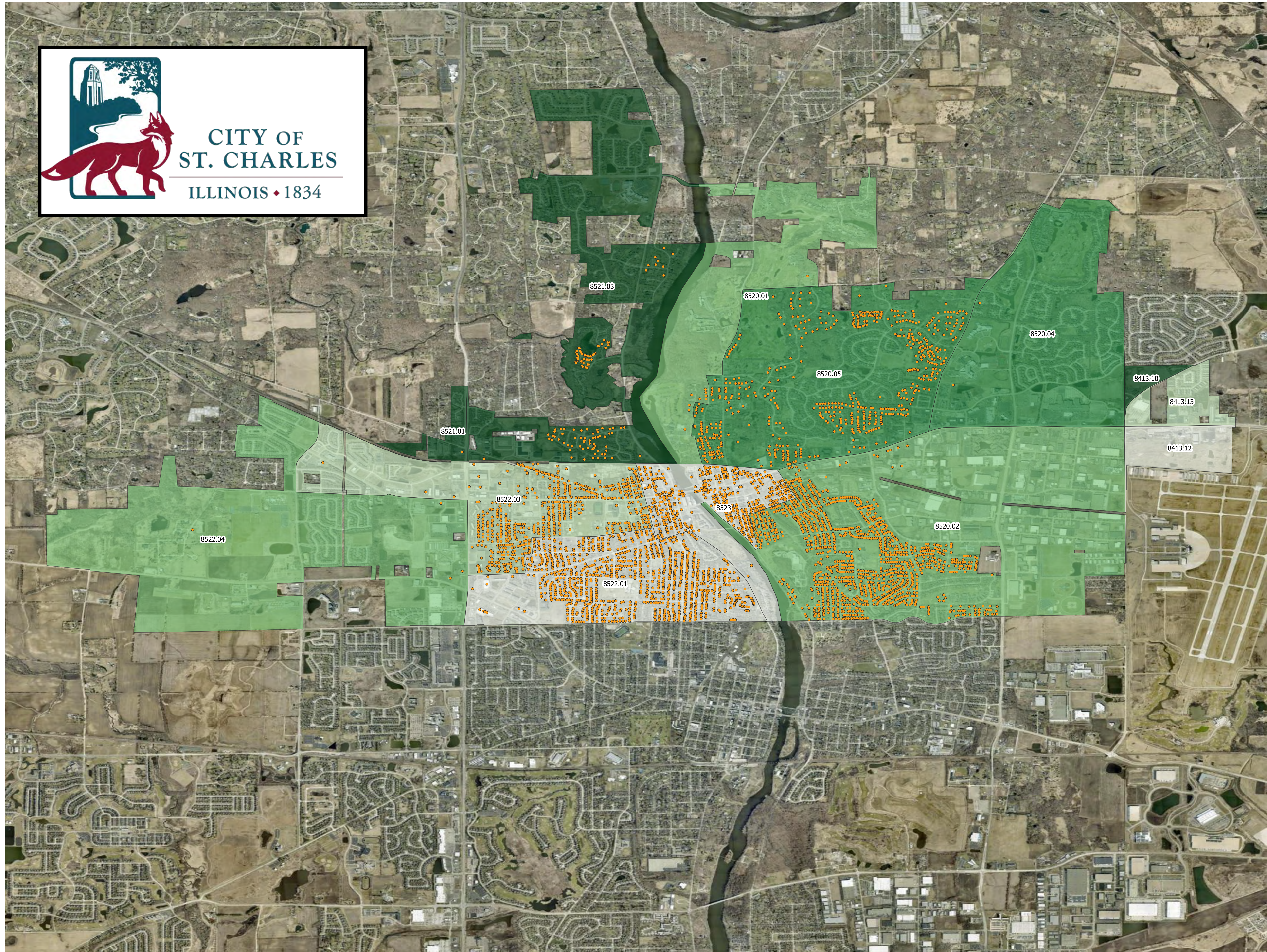
ILLINOIS
IOWA
WISCONSIN

PLOT DATE: 4/9/24

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Exhibit 4

Median Household Income



Census Tract Map

Median Household Income with Confirmed Lead Services Lines

● Confirmed Lead Service Lines

Median Household Income Range

- \$59,962 - \$79,951
- \$79,951 - \$87,920
- \$87,920 - \$133,929
- \$133,929 - \$154,703
- \$154,703 - \$175,018

Esri Standard

Exhibit Information

City of St. Charles
Project No.: 22-818 Phase 10
Date: April 9, 2024
Prepared By: M. Ripalda

Reference
Imagery: ESRI Imagery
Subbasins: Produced with Census Data
Mapping: Created with QGIS

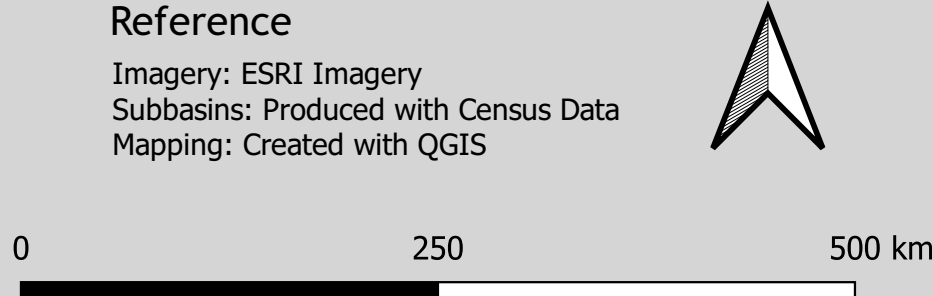
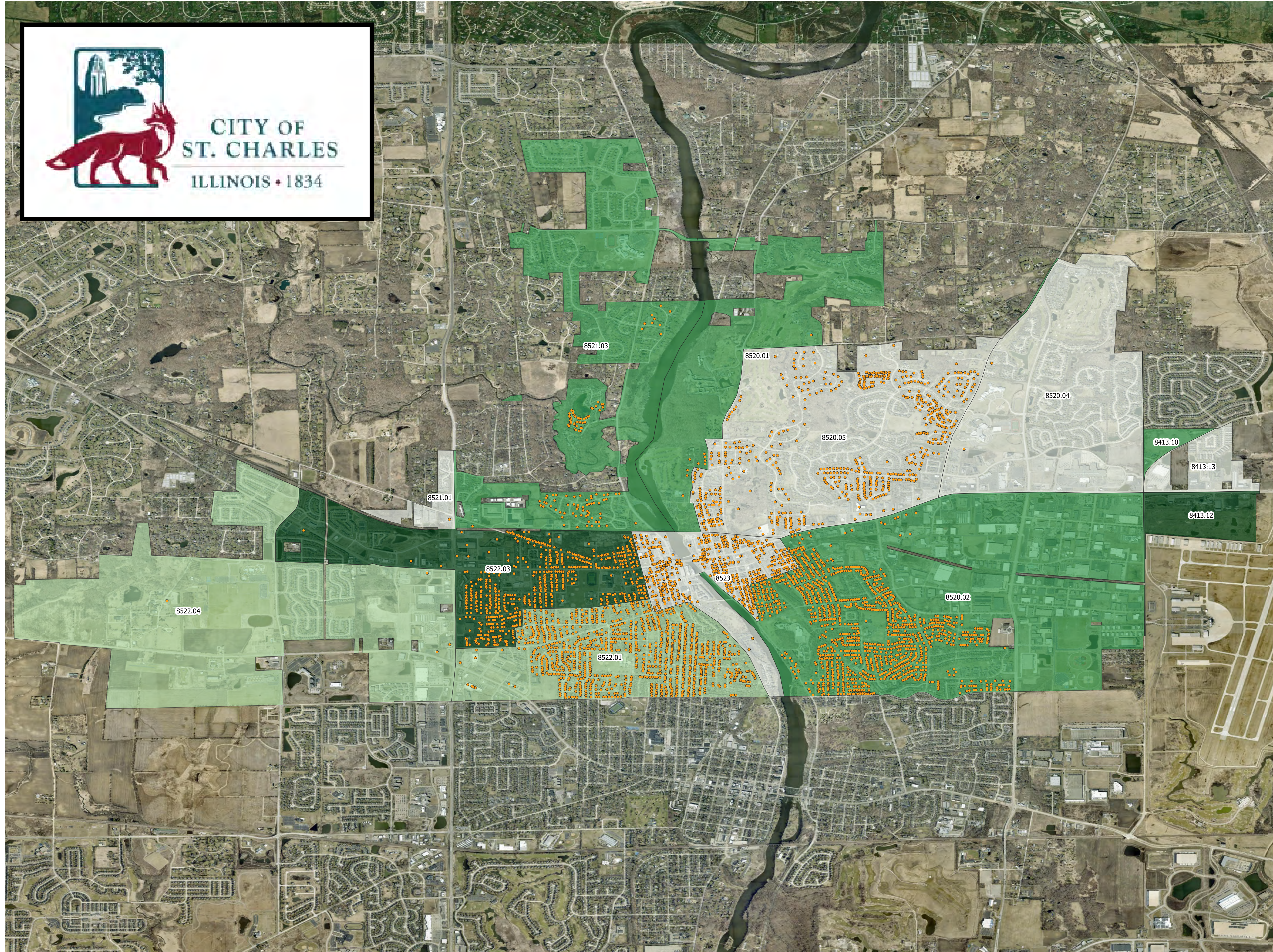


Exhibit 5

Children Under 6 Years Old



Census Tract Map

Children under 6 years old with Confirmed Lead Services

● Confirmed Lead Service Line

Children under 6 years old

- 2% - 4%
- 4% - 5%
- 5% - 7%
- 7% - 11%

ESRI Imagery

Exhibit Information

City of St. Charles
Project No.: 22-818 Phase 10
Date: April 8, 2024
Prepared By: M. Ripalda

Reference
Imagery: ESRI Imagery
Subbasins: Produced with Census Data
Mapping: Created with QGIS

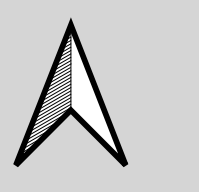
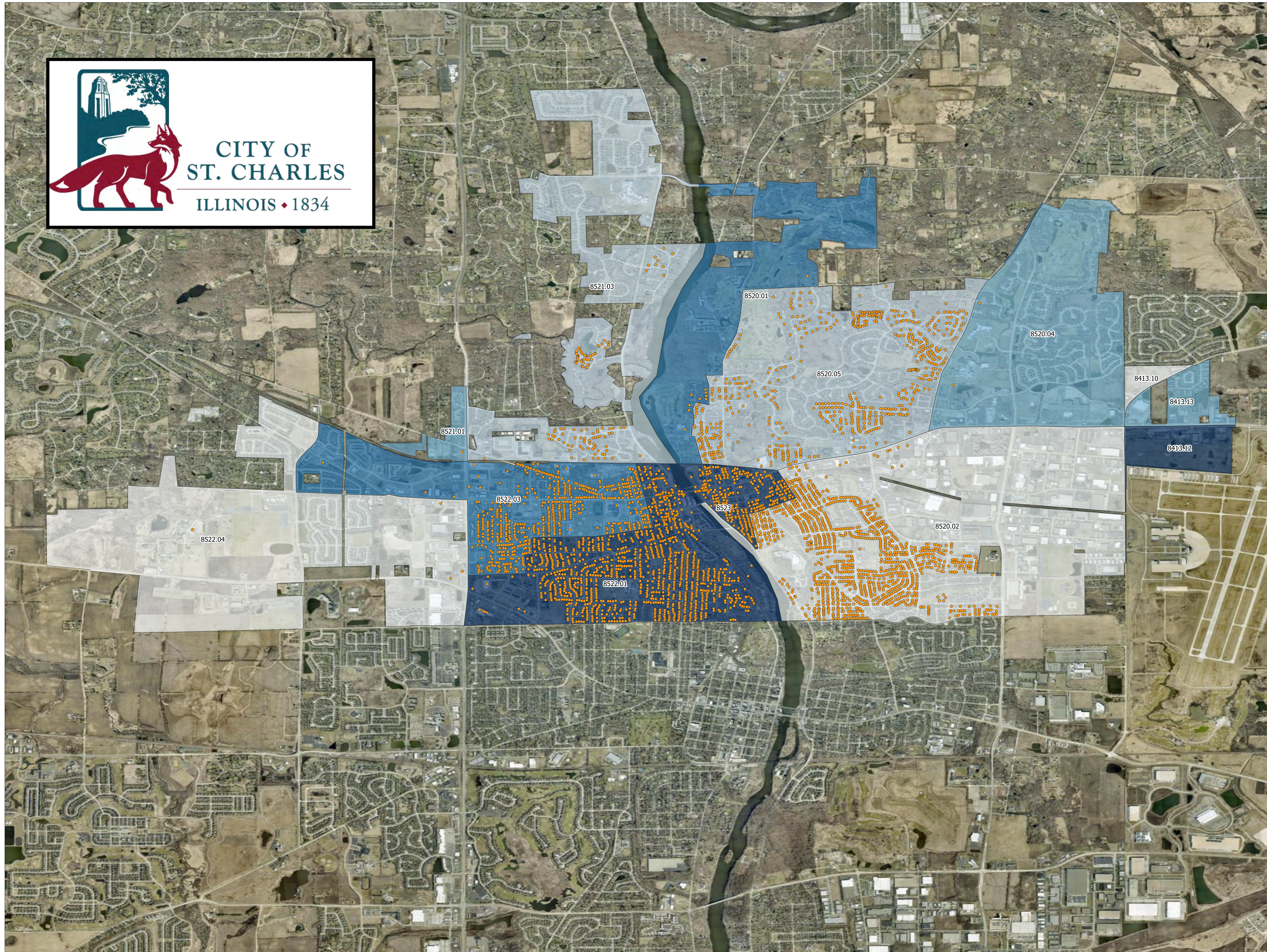


Exhibit 6

Poverty



Census Tract Metric

Poverty with Confirmed Lead Services Lines

Confirmed Lead Service Lines

Poverty

- 0.5% - 1.6%
- 1.6% - 3.2%
- 3.2% - 4.4%
- 4.4% - 6.9%
- 6.9% - 21.8%

ESRI Imagery

Exhibit Information

City of St. Charles
Project No.: 22-818 Phase 10
Date: April 9, 2024
Prepared By: M. Ripalda

Reference

Imagery: ESRI Imagery
Subbasins: Produced with Census Data
Mapping: Created with QGIS

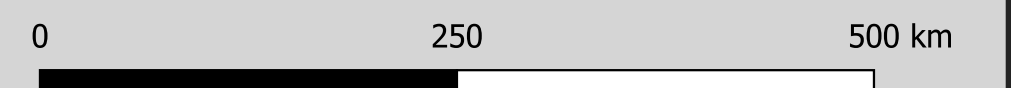
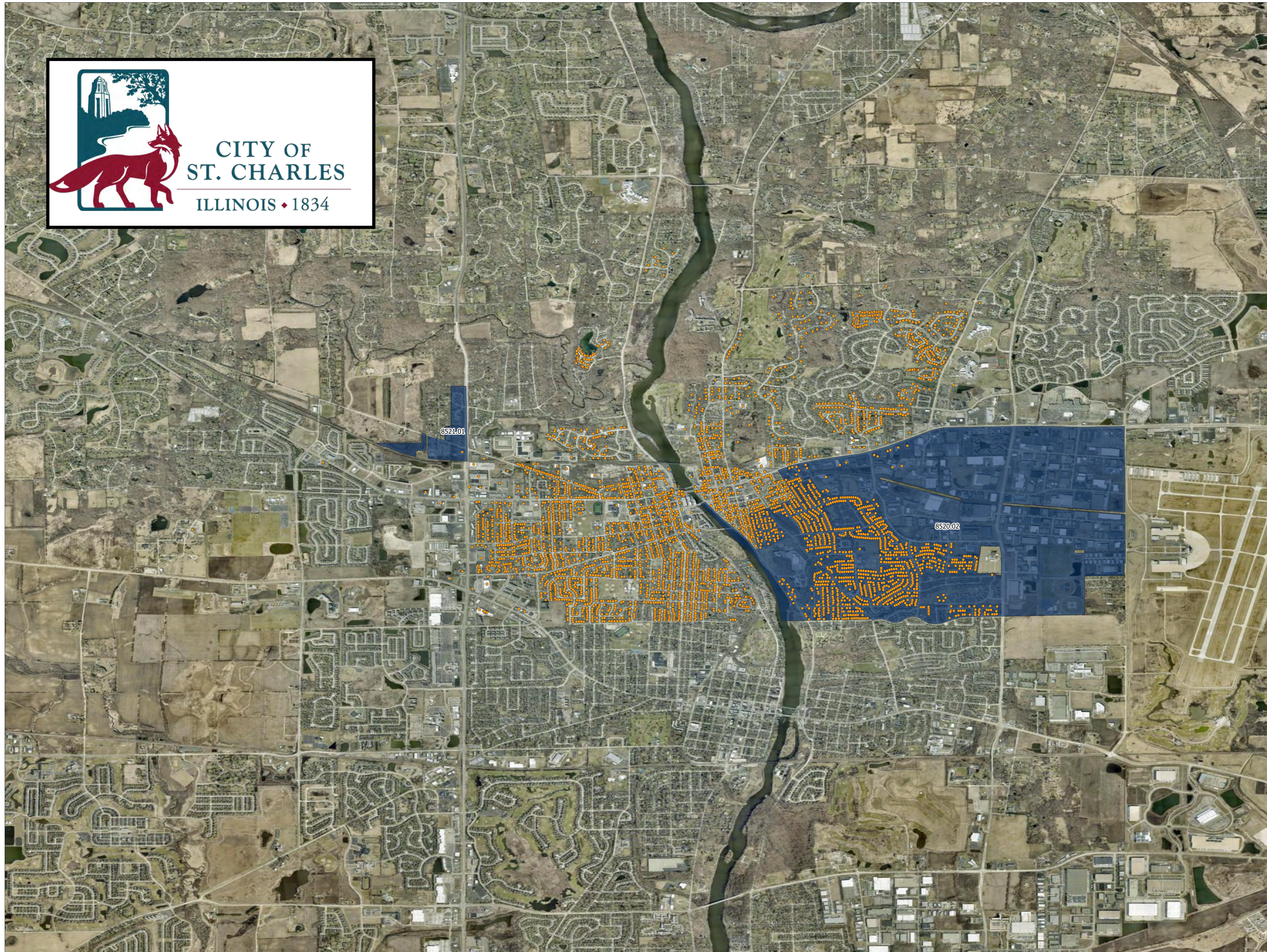


Exhibit 7
Unemployment



Census Tract Map

Unemployment with Confirmed Lead Services Lines

● Confirmed Lead Service Lines

Unemployment

- 0% - 0%
- 0% - 0%
- 0% - 0%
- 0% - 3.6%

ESRI Imagery

Exhibit Information

City of St. Charles
Project No.: 22-818 Phase 10
Date: April 9, 2024
Prepared By: M. Ripalda

Reference

Imagery: ESRI Imagery
Subbasins: Produced with Census Data
Mapping: Created with QGIS

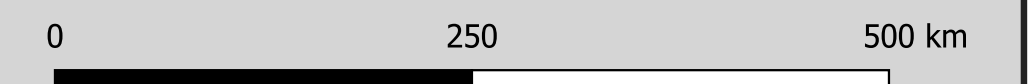
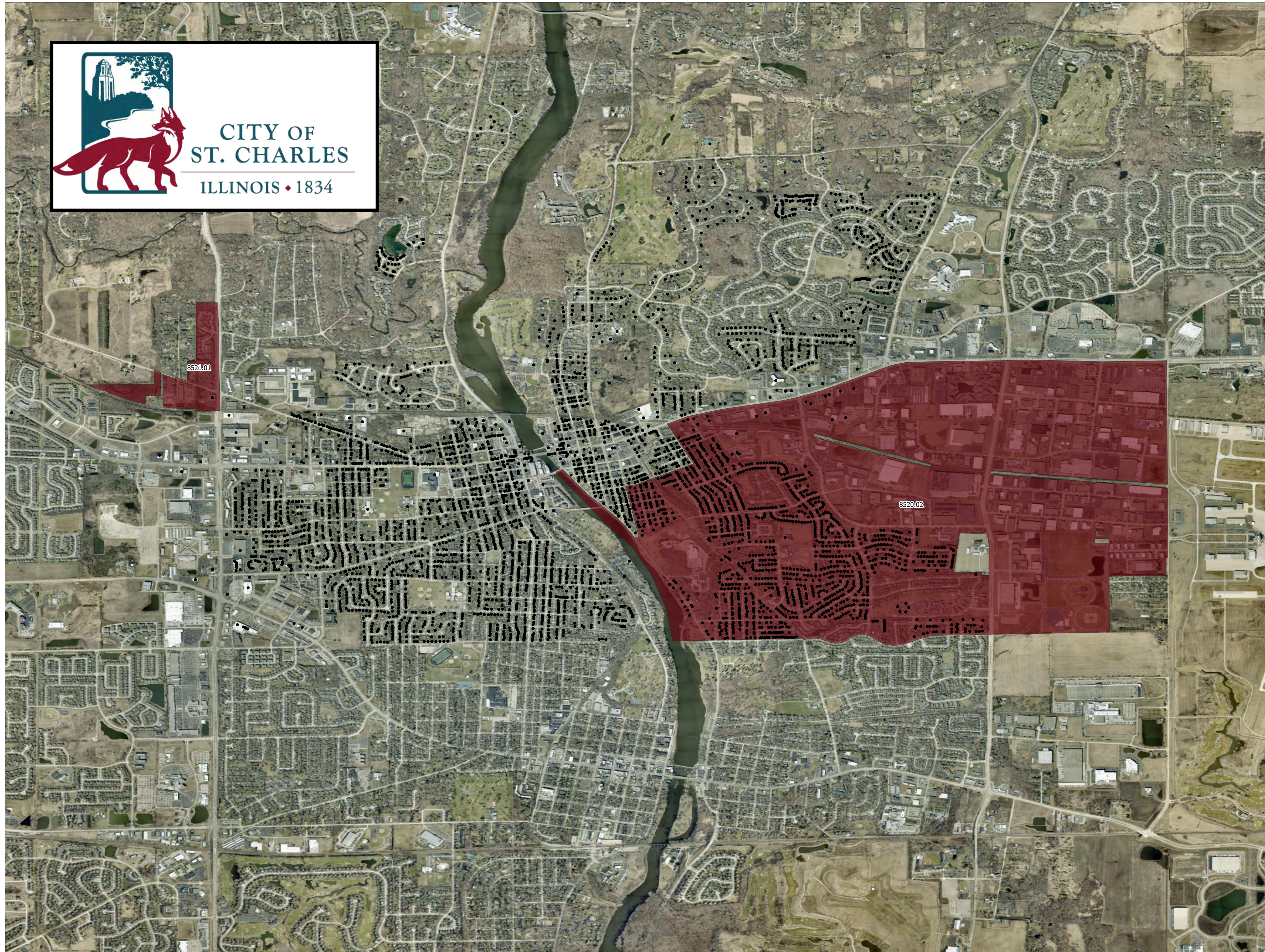


Exhibit 8

Social Security Percentage



Census Tract Map

Social Security with Confirmed Lead Services Lines

● Confirmed Lead Service Lines

Social Security

- 0% - 0%
- 0% - 0%
- 0% - 0%
- 0% - 0%
- 0% - 22%

ESRI Imagery

Exhibit Information

City of St. Charles
Project No.: 22-818 Phase 10
Date: April 9, 2024
Prepared By: M. Ripalda

Reference

Imagery: ESRI Imagery
Subbasins: Produced with Census Data
Mapping: Created with QGIS

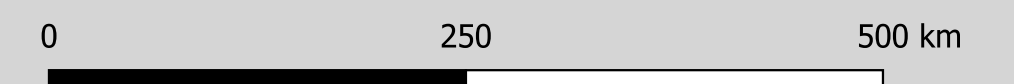
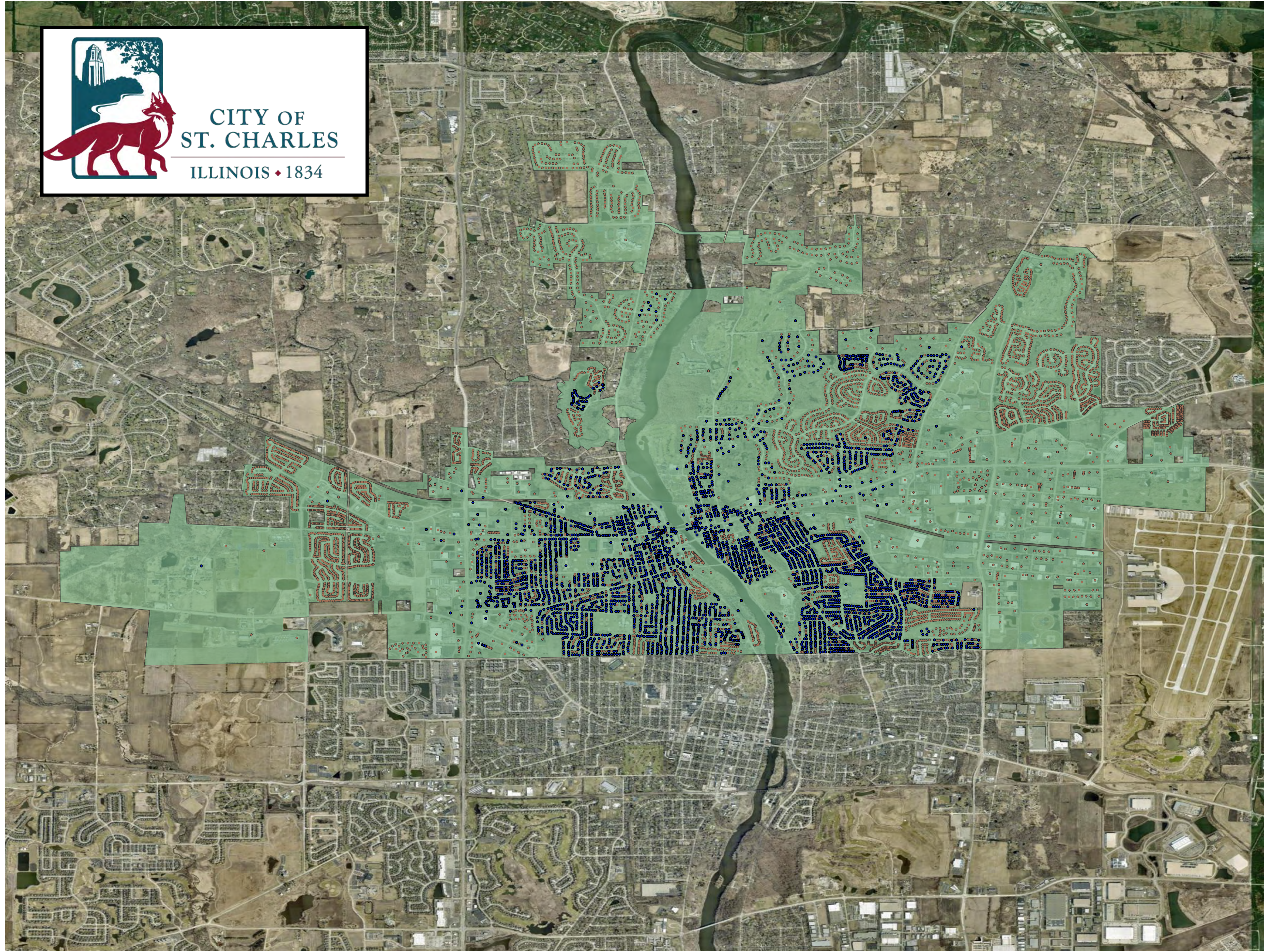


Exhibit 9

Lead Service Line Replacement Percentage



Lead vs. Non-Lead Service Lines





-  Confirmed Lead Service Line
-  Confirmed Non-Lead Service Lines
-  St. Charles Boundary
-  ESRI Imagery

Exhibit Information

City of St. Charles
Project No.: 22-818 Phase 10
Date: April 9, 2024
Prepared By: M. Ripalda

Reference
Imagery: ESRI Imagery
Subbasins: Produced with Census Data
Mapping: Created with QGIS

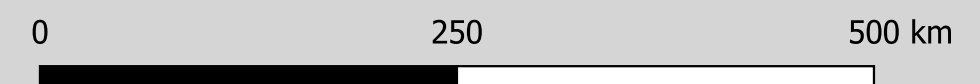
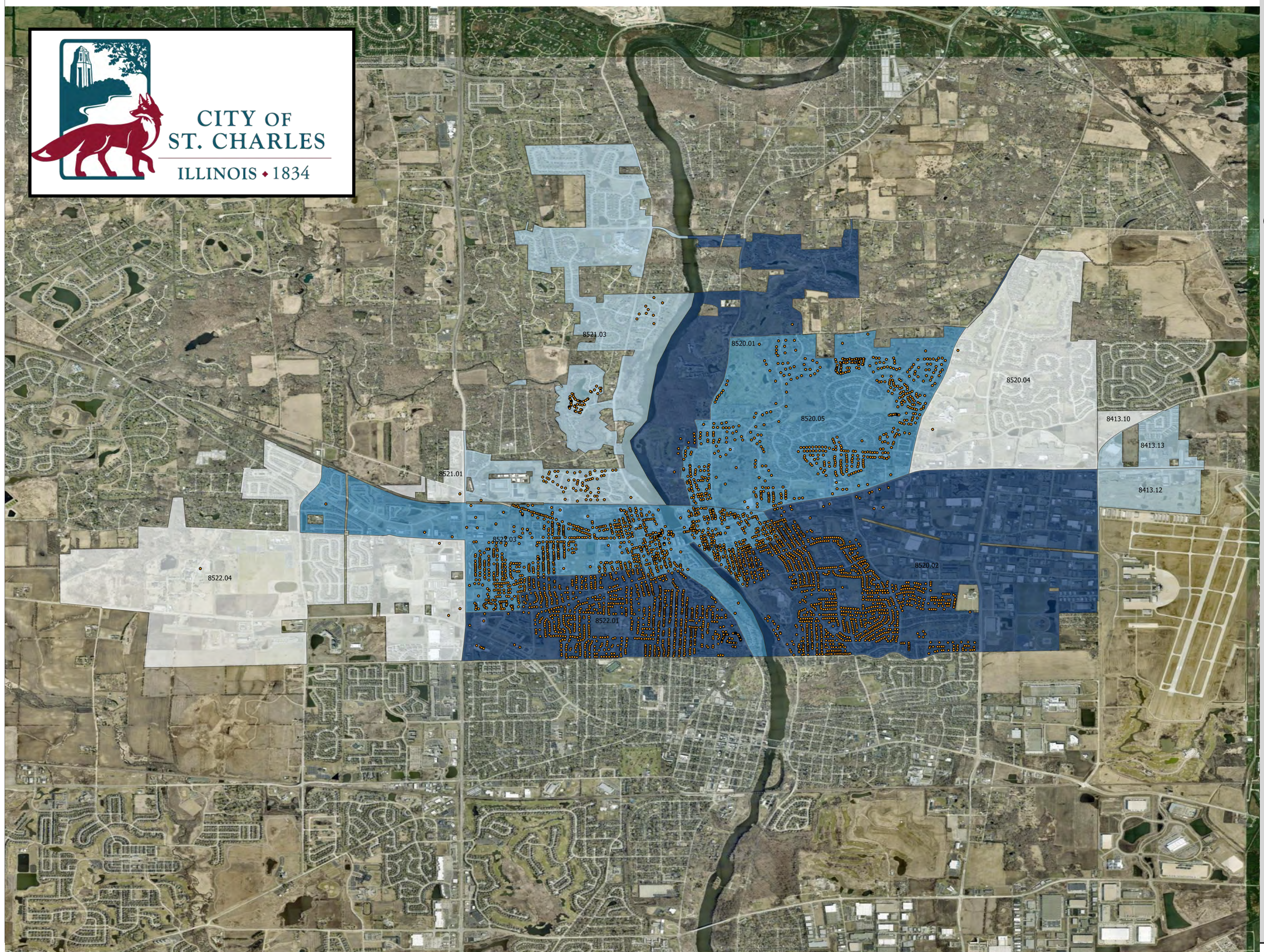


Exhibit 10

Pre-1990 House



Census Tract Map

Homes Built Pre-1990 with Confirmed Lead Service Lines

● Confirmed Lead Service Line

- Built Pre-1990
- 12% - 25%
 - 25% - 57%
 - 57% - 66%
 - 66% - 79%

ESRI Imagery

Exhibit Information

City of St. Charles
Project No.: 22-818 Phase 10
Date: April 9, 2024
Prepared By: M. Ripalda

Reference
Imagery: ESRI Imagery
Subbasins: Produced with Census Data
Mapping: Created with QGIS

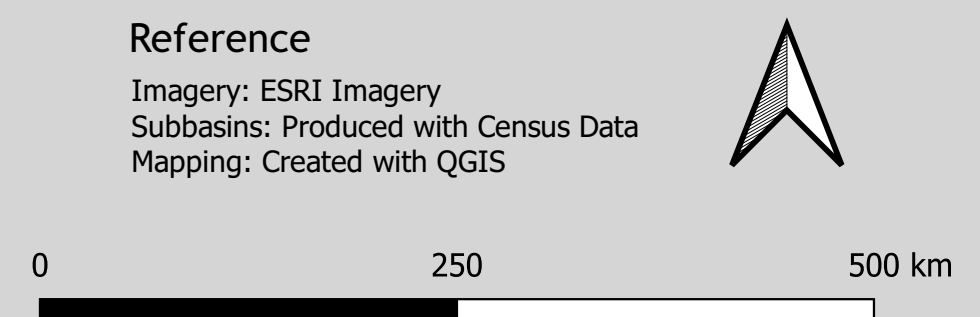
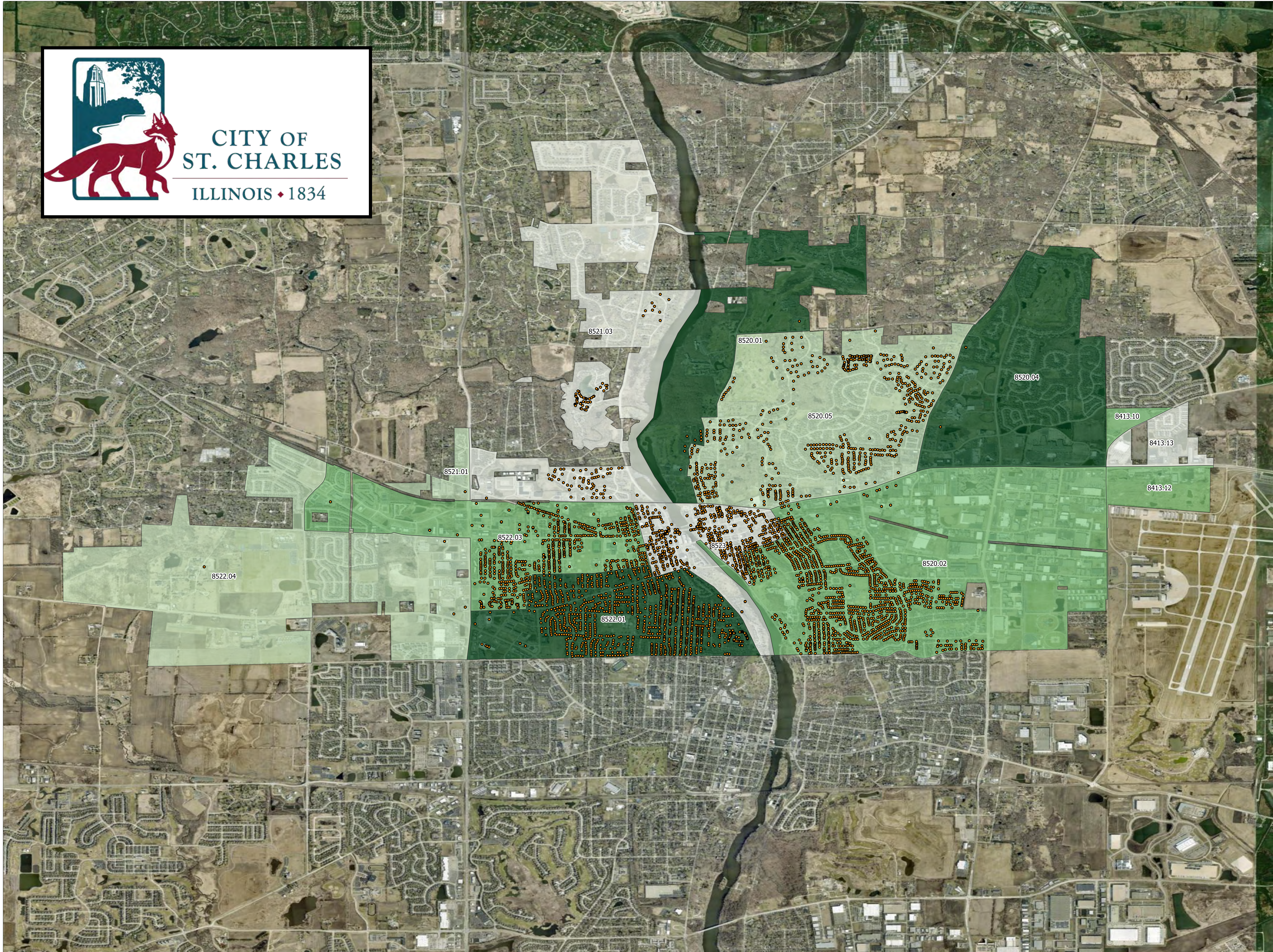


Exhibit 11
Supplemental Security Income



Census Tract Metric

Supplemental Security Income with Confirmed Lead Services Lines

- Confirmed Lead Service Line

Supplemental Security Income Percentage:

- 0 - 0.4
- 0.4 - 1
- 1 - 3
- 3 - 3.6
- 3.6 - 4

ESRI Imagery

Exhibit Information

City of St. Charles
Project No.: 22-818 Phase 10
Date: April 9, 2024
Prepared By: M. Ripalda

Reference
Imagery: ESRI Imagery
Subbasins: Produced with Census Data
Mapping: Created with QGIS



Exhibit 12

Post Replacement Service Line Flushing

Exhibit 12

Customer Flushing After Lead Service Line Replacement

The replacement of lead service lines may temporarily increase lead concentrations in drinking water due to the release of metal from scale on pipes in the home that have not been replaced. The lead concentration should decrease after time. The contractor has flushed the new service line to your home. It is strongly recommended that the interior plumbing also be flushed now that the new service line is installed. See the flushing procedure below that is recommended by the American Water Works Association.

Instructions for Customer Flushing of Interior Plumbing

1. Find all the faucets that will drain, including the basement and all floors in your house.
2. Remove aerators and screens whenever possible, including the shower heads, from all faucets you plan to flush.
3. Include the laundry tubs, hose-bibs, bathtubs, and showers as flushing points.
4. After all the aerators are off, open the faucets in the basement or lowest floor in the house. Leave all faucets running at the highest rate possible, using cold water.
5. After the faucets are all open on the lowest floor, open the faucets on the next highest floor of the house. Continue until faucets are open on all floors.
6. After all faucets are opened, leave the water running for at least 30 minutes.
7. After 30 minutes, turn off the first faucet you opened and continue to turn off other faucets in the same order you turned them on.
8. Clean aerators/screens at each faucet. You may need to replace screens/aerators if they are too old or worn.

Water Testing Following Replacement

Approximately one month after service line replacement, collection of a sample for lead testing is recommended. The sample should be a first-draw sample after water has not been used for at least 6 hours. The sample must be collected from a tap used frequently inside the home, preferably from the kitchen. Collect the sample with the aerator on, at maximum flow, and in a wide-mouth sample bottle.

As a precaution, until the sample is collected and analyzed, the customer should do a mini-flush of premise plumbing by running tap water each morning or when the water sits in the pipe for at least 6 hours. Flush for 5 minutes to displace water that has been sitting in the pipes inside the house and in the service line. This could include taking a shower, running the dishwasher, flushing a toilet, collecting water for plants/garden, or running the faucet. The customer should do this before using any water for drinking, cooking, infant formula, and so on. Daily mini flushes should continue for six months or until lead sample results show the lead level is below the regulatory guideline. The customer should clean debris from aerators and screens once a month for six months. After six months, clean debris twice a year.

Exhibit 13

Typical Lead Service Line Replacement Cost



Typical City of St. Charles Lead Service Line Replacement Cost Detail

Pay Item No.	Item	Unit	Public Quantity	Private Quantity	Unit Price	Public Total Price	Private Total Price
Loan Participating Items							
1	Public Water Service, Bored or Pulled, Copper, Complete, 1"	LF	30	0	\$175.00	\$5,250.00	\$0.00
2	Private Water Service, Bored or Pulled, Copper, Complete, 1"	LF	0	0	\$175.00	\$0.00	\$0.00
3	Private Water Service, Bored or Pulled, HDPE, Complete, 1"	LF	0	30	\$175.00	\$0.00	\$5,250.00
4	Sidewalk Removal & Replacement	SF	30	0	\$6.25	\$187.50	\$0.00
5	Pavement Removal & Patch Replacement, Class D	SY	12	0	\$62.50	\$750.00	\$0.00
6	Combination Curb and Gutter Removal & Replacement	LF	12	0	\$25.00	\$300.00	\$0.00
7	Connection to Water Meter (Basement/Crawlspace), Complete	EA	0	1	\$562.50	\$0.00	\$562.50
8	Restoration, Complete	LS	1	0	\$375.00	\$375.00	\$0.00
9	Traffic Control and Protection	LS	1	0	\$0.01	\$0.01	\$0.00
10	Primary Electrical Grounding System Installation	EA	0	1	\$1,250.00	\$0.00	\$1,250.00
11	Reconnection of Water Service Electrical Jumper Cable	EA	0	1	\$625.00	\$0.00	\$625.00
12	PCC Pavement, Jointed, Removal and Replacement, 9"	SY	0	0	\$194.00	\$0.00	\$0.00
13	PCC Approach Pavement Removal & Replacement, 6"	SY	0	0	\$145.00	\$0.00	\$0.00
14	Tree Removal (6-15 Units)	UD	0	0	\$62.50	\$0.00	\$0.00
15	Tree Removal (Over 15 Units)	UD	0	0	\$100.00	\$0.00	\$0.00
16	Rock Excavation	CY	0	0	\$156.00	\$0.00	\$0.00
17	Hot-Mix Asphalt Approach Pavement Removal & Replacement, 3"	SY	0	0	\$97.50	\$0.00	\$0.00
18	Retaining Wall, Modular Block, Complete	SF	0	0	\$100.00	\$0.00	\$0.00
19	Retaining Wall, PCC Concrete, Complete	CY	0	0	\$125.00	\$0.00	\$0.00
20	Silt Fence	LF	0	0	\$6.25	\$0.00	\$0.00
21	Inlet and Pipe Protection	EA	0	0	\$125.00	\$0.00	\$0.00
22	Restoration, Open-Cut, Complete	LS	0	0	\$375.00	\$0.00	\$0.00
23	Water Meter Relocation, Complete	LF	1	0	\$81.25	\$81.25	\$0.00
24	Additional Set-up Boring Length	LF	8	0	\$50.00	\$400.00	\$0.00
25	Public Water Service, Open-Cut, Copper, Complete, 1"	LF	0	0	\$156.25	\$0.00	\$0.00
26	Private Water Service, Open-Cut, Copper, Complete, 1"	LF	0	0	\$150.00	\$0.00	\$0.00
27	Private Water Service, Open-Cut, HDPE, Complete, 1"	LF	0	0	\$143.75	\$0.00	\$0.00
28	Public Water Service, Open-Cut, Copper, Complete, 1.5"	LF	0	0	\$200.00	\$0.00	\$0.00
29	Private Water Service, Open-Cut, Copper, Complete, 1.5"	LF	0	0	\$168.75	\$0.00	\$0.00

Pay Item No.	Item	Unit	Public Quantity	Private Quantity	Unit Price	Public Total Price	Private Total Price
30	Private Water Service, Open-Cut, HDPE, Complete, 1.5"	LF	0	0	\$156.25	\$0.00	\$0.00
31	Public Water Service, Open-Cut, Copper, Complete, 2"	LF	0	0	\$218.75	\$0.00	\$0.00
32	Private Water Service, Open-Cut, Copper, Complete, 2"	LF	0	0	\$206.25	\$0.00	\$0.00
33	Private Water Service, Open-Cut, HDPE, Complete, 2"	LF	0	0	\$175.00	\$0.00	\$0.00
34	Public Water Service, Bored or Pulled, Copper, Complete 1.5"	LF	0	0	\$150.00	\$0.00	\$0.00
35	Private Water Service, Bored or Pulled, Copper, Complete 1.5"	LF	0	0	\$162.50	\$0.00	\$0.00
36	Private Water Service, Bored or Pulled, HDPE, Complete 1.5"	LF	0	0	\$150.00	\$0.00	\$0.00
37	Public Water Service, Bored or Pulled, Copper, Complete 2"	LF	0	0	\$212.50	\$0.00	\$0.00
38	Private Water Service, Bored or Pulled, Copper, Complete 2"	LF	0	0	\$181.25	\$0.00	\$0.00
39	Private Water Service, Bored or Pulled, HDPE, Complete 2"	LF	0	0	\$156.25	\$0.00	\$0.00
40	Water Service Casing	LF	0	0	\$25.00	\$0.00	\$0.00
41	Public Water Service Bored Through Rock, Copper, Complete, 1" with 2" Casing	LF	0	0	\$206.25	\$0.00	\$0.00
42	Private Water Service Bored Through Rock, Copper, Complete, 1" with 2" Casing	LF	0	0	\$193.75	\$0.00	\$0.00
43	Private Water Service Bored Through Rock, HDPE, Complete, 1" with 2" Casing	LF	0	0	\$181.25	\$0.00	\$0.00
44	Public Water Service Bored Through Rock, Copper, Complete, 1.5" with 2" Casing	LF	0	0	\$231.25	\$0.00	\$0.00
45	Private Water Service Bored Through Rock, Copper, Complete, 1.5" with 2" Casing	LF	0	0	\$212.50	\$0.00	\$0.00
46	Private Water Service Bored Through Rock, HDPE, Complete, 1.5" with 2" Casing	LF	0	0	\$200.00	\$0.00	\$0.00
47	Public Water Service Bored Through Rock, Copper, Complete, 2" with 3" Casing	LF	0	0	\$243.75	\$0.00	\$0.00
48	Private Water Service Bored Through Rock, Copper, Complete, 2" with 3" Casing	LF	0	0	\$231.25	\$0.00	\$0.00
49	Private Water Service Bored Through Rock, HDPE, Complete, 2" with 3" Casing	LF	0	0	\$225.00	\$0.00	\$0.00
50	Traffic Control and Protection, Special	LS	0	0	\$2,500.00	\$0.00	\$0.00
51	Connection to Water Meter (Slab on Grade), Complete	EA	0	0	\$1,000.00	\$0.00	\$0.00
52	Brick Pavement, Complete	SY	0	0	\$406.25	\$0.00	\$0.00
53	Exploratory Excavation, B-Box Service Material Identification	EA	0	0	\$1,375.00	\$0.00	\$0.00
54	Exploratory Excavation, Pulling Failure Reconnection	EA	0	0	\$1.25	\$0.00	\$0.00
55	Additional Service Line Abandonment	EA	0	0	\$2,750.00	\$0.00	\$0.00
56	Additional Corporation Stop Abandonment	EA	0	0	\$2,750.00	\$0.00	\$0.00

Subtotal	\$7,343.76	\$7,687.50
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Total	\$15,031.26
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Exhibit 14

Lead Service Line Replacement Procedures

Lead Service Line Replacement Procedure Breakdown

- Upon arrival, a site meeting is conducted with the Foreman and plumber where they will then go into the basement where the existing water service comes into the building as other crew members set up any necessary traffic control measures.
- The foreman will then determine where the best place to bore into the building will be, avoiding the sanitary service line and any other previously located underground utilities. Also at this point, the plumber will determine the best place to tie back into the existing building plumbing.
- Foreman will then go back outside to verify the bore routing is not going to traverse the sanitary line crossing the property. If it is not, he will then mark out where a new B-box hole will be dug. The operator will then dig a 6ft deep hole in the yard for a new shut-off valve and remove any sidewalk pavement and curb that could be in the boring route.
- Next, they will mark out the pavement and curb to be saw cut and remove it to be able to dig down and expose the water main and existing service line.
- Next, they will turn off the shut-off on the existing corporation valve, cut off the existing lead line, and put on an abandonment sleeve on the old corporation valve to prevent any leaks.
- The plumber and one crew member will then tap a new corporation valve into the main for the new copper service.
- The boring operator will then set up the boring machine - lining up with the entry point the Foreman marked out having the bore head enter the bank of the watermain hole towards the building at a depth under the frost line.
- The boring operator will follow the line hitting the B-box hole and continuing to the specified entry point in the basement where the Foreman will then jackhammer a hole in the basement floor big enough to hook a new service line onto the head of the boring machine.
- The boring operator will then start pulling each rod back, bringing the boring head back towards him and pulling the new service line back through the borehole - hitting the B-box hole and then enough to hook onto the new line to reach the new corporation valve on the water main.
- Next, they will cut off any extra copper and unscrew the nut on the new corporation valve, sliding the copper line into the corporation valve hole and tightening down the nut to secure the copper line into place.
- Next, they will install the new shut-off valve in the B-box hole.
- Once the plumber has a valve on in the building, they will open the corporation valve by turning on the water making sure there are no leaks. Once verified, they will back-fill both holes.
- The plumber will then install a new meter and tie it into the existing building plumbing. He will then turn the water on feeding into the rest of the house, flushing out any air or rust buildup.
- The electrician will be on-site to update the grounding system, adding any ground rods as needed. He will also add a jumper wire to the meter.



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