

Project Plan

City of Kalamazoo FY 2023 Drinking Water Project Plan

Prepared for
City of Kalamazoo

March 2022

2200787

Contents

| | | |
|----------|--|----------|
| 1 | City of Kalamazoo – Lead Water Service and Water Main Replacement | 1 |
| 1.1 | Project Background..... | 1 |
| 1.1.1 | Delineation of Study Area..... | 1 |
| 1.1.2 | Land Use..... | 1 |
| 1.1.3 | Population Projections..... | 2 |
| 1.1.4 | Water Demand and Existing Facilities | 2 |
| 1.1.5 | Summary of Project Need..... | 2 |
| 1.2 | Analysis of Alternatives..... | 3 |
| 1.2.1 | Routing Options | 3 |
| 1.2.2 | Method of Construction | 3 |
| 1.2.3 | Pipe Material..... | 3 |
| 1.2.4 | No Action | 4 |
| 1.2.5 | Optimum Performance of Existing Facilities..... | 4 |
| 1.2.6 | Regional Alternatives | 4 |
| 1.3 | Principal Alternatives | 4 |
| 1.4 | Selected Alternative..... | 5 |
| 1.4.1 | Design Parameters..... | 5 |
| 1.4.2 | Maps | 5 |
| 1.4.3 | Schedule..... | 5 |
| 1.4.4 | Cost Estimates..... | 5 |
| 1.4.5 | Users Costs..... | 6 |
| 1.4.6 | Disadvantaged Community..... | 6 |
| 1.4.7 | Ability to Implement the Selected Alternatives..... | 6 |
| 1.5 | Environmental Evaluation..... | 7 |
| 1.5.1 | Historical/Archaeological..... | 7 |
| 1.5.2 | Water Quality..... | 7 |
| 1.5.3 | Land/Water Interface | 7 |
| 1.5.4 | Endangered Species | 7 |
| 1.5.5 | Agricultural Land | 7 |
| 1.5.6 | Social/Economic Impact..... | 8 |
| 1.5.7 | Construction/Operational Impact..... | 8 |

| | | |
|-------|--|----|
| 1.5.8 | Indirect Impacts | 8 |
| 1.6 | Mitigation Measures..... | 10 |
| 1.6.1 | Short Term Construction Related Mitigation | 10 |
| 1.6.2 | Traffic Disruption | 10 |
| 1.6.3 | Dust and Noise | 10 |
| 1.6.4 | Soil Erosion..... | 10 |
| 1.6.5 | Water Service Disruption..... | 10 |
| 1.6.6 | Potential Loss of Wildlife / Habitat | 11 |
| 1.6.7 | Mitigation of Indirect Impacts | 11 |
| 1.7 | Public Participation | 11 |
| 1.7.1 | Public Meetings..... | 11 |
| 1.7.2 | Formal Public Hearing..... | 11 |
| 1.7.3 | Adoption of Project Plan..... | 12 |

Figures

| | |
|-----------|--------------------------------------|
| Figure 1A | Proposed Project Area |
| Figure 1B | Proposed Water Main Replacements |
| Figure 1C | Proposed Supply Consolidation Header |
| Figure 2 | Project Area Zoning Map |
| Figure 3 | Project Poverty Areas |
| Figure 4 | Floodway within the Project Area |

Appendices

| | |
|------------|--|
| Appendix A | Project Costs |
| Appendix B | SHPO Review |
| Appendix C | Public Hearing Notice and Affidavit |
| Appendix D | Public Hearing Transcript - April 18, 2022 |
| Appendix E | Project Plan Resolution |
| Appendix F | Disadvantaged Status Determination |

1 City of Kalamazoo – Lead Water Service and Water Main Replacement

1.1 Project Background

The City has been in the process of identifying and replacing all lead or potential lead services in the City of Kalamazoo water system. In the past three years, they have replaced over 5,000 lead services. As part of the overall effort, the City has identified the existence (or potential existence) of approximately 1,500 lead services in the neighborhoods south of Mosel Avenue and west of the Kalamazoo River. Pursuant with current State of Michigan requirements, the City has implemented a program to replace all the lead lines in their water system. Additionally, the City has identified several undersized water mains and mains experiencing a significant number of breaks resulting in shutdown of sections of the distribution system and boil-water orders.

The City of Kalamazoo has entered into an Administrative Consent Order (ACO) with the Michigan Department of Environment, Great Lakes, and Energy (EGLE) that is intended to address issues with the City's drinking water supply system as identified by EGLE. This project includes a Supply Consolidation Header water main to connect Pump Station #2 on Born Court to the Pump Station #1 Central Treatment Plant to address item 2.2 in the ACO Dated December 3, 2020.

1.1.1 Delineation of Study Area

The extent of the project area is illustrated in Figure 1A. The area is bounded on the west by Nichols Road and extends east to Riverview Drive. The northern boundary is Mosel Avenue extending south to West Main Street and Kalamazoo Avenue. All existing water services, suspected to potentially contain lead, will be replaced in the project area. There will also be replacement of existing water mains in the area south and east of Fletcher Avenue/Hillsdale Avenue and in the Lulu Street area. These are shown in Figure 1B. The proposed Supply Consolidation Header is shown in Figure 1C.

1.1.2 Land Use

The current zoning map is shown in Figure 2. The area affected has mixed land use, with both residential and urban areas as well as industrial zoning. According to the Master Plan the City does not expect zoning changes for the project area.

1.1.3 Population Projections

The area is nearly fully developed and has a current population of approximately 5,000 people. The 10-year population projection is 5,000 and the 20-year population projection is 5,000.

1.1.4 Water Demand and Existing Facilities

A comprehensive review of the City of Kalamazoo water system is contained in the 2016 City of Kalamazoo Water Reliability Study. That study concluded that the system has adequate supply for both current and future demands.

1.1.5 Summary of Project Need

1.1.5.1 Standards Compliance and Reliability

The City of Kalamazoo water system is currently in compliance with all drinking water standards and has the capacity to serve the affected area.

1.1.5.2 Orders of Enforcement Action

The City is currently addressing items specifically noted in the December 3, 2020 Administrative Consent Order issued by the State of Michigan.

1.1.5.3 Drinking Water Quality Problems`

The proposed project is required to provide potable water, free of lead, to the City of Kalamazoo residents in the affected area. There are approximately 1,500 residential homes potentially impacted by lead services in this area. Additionally, there are undersized watermains and mains experiencing significant break frequencies that require replacement.

1.1.5.4 Projected Needs for the Next 20 Years

The area is currently nearly fully developed and land use is not expected to change. A comprehensive review of the current and future needs can be found in the 2016 City of Kalamazoo Water Reliability Study.

1.2 Analysis of Alternatives

1.2.1 Routing Options

In the areas where the project will replace existing water services and water mains, there are no route alternatives available so the mains and services will be replaced in either the same locations or directly adjacent to the existing locations. The Source Consolidation Header will be placed on City owned property and/or public right-of-way in the shortest route between the two pump stations. No other routing options are feasible.

1.2.2 Method of Construction

1.2.2.1 Open Cut

Traditional open cut methods of excavation are used extensively in the Kalamazoo area for installation of most underground public utilities. Open cut construction allows the greatest control of water service depth and alignment.

1.2.2.2 Directional Drill

Directional drilling is the process of using a small, steer-able steel pipe that is guided under the soil to create a pilot hole. The pipe is guided by above-grade monitoring equipment that tracks the depth and location. Once the guided head reaches its location, the host pipe is attached and pulled back through the pilot hole. Although directional drilling is not the preferred method for the primary water mains, it is the preferred method for the proposed water service lines. Small diameter service lines can be accurately and economically installed via directional drilling with less ground disturbance.

1.2.3 Pipe Material

- 1.2.3.1 Water Services - Current City of Kalamazoo Building Code adopts the use of the Michigan Building Code and Michigan Residential Code. These codes allow for the use of multiple water service materials on the private property side of water services. Because the City of Kalamazoo is responsible for water services from the water main up to, and including, the water meter, all water services

installed will be Type K copper as is required of services in the City of Kalamazoo water system.

- 1.2.3.2 Water Mains – The current City of Kalamazoo Standards for Construction require the use of minimum Class 52 Ductile Iron pipe, materials, and fittings in accordance with ANSI/AWWA Standards.

1.2.4 No Action

Taking no action to provide public potable water to this area of the City of Kalamazoo would force all properties to utilize bottled water in perpetuity. Property values could be significantly affected and the long term health of the residents may be detrimentally affected. Additionally, frequent water main breaks and aging water mains cause issuance of boil water notices and interruption of potable water supply.

1.2.5 Optimum Performance of Existing Facilities

Some improvement in the water quality can be obtained by installing carbon filters on each individual water services. However this has been proven by projects throughout the State of Michigan to not be a reliable, long-term solution to lead contamination. The existing watermains have been pushed to the full extent of their useful life and must be replaced to maintain the safety and full function of the distribution system. Installing the supply consolidation header between PS#2 and the Central Treatment Plant will meet the ACO goals of reducing supply points in the distribution system.

1.2.6 Regional Alternatives

The City of Kalamazoo is the regional water provider and will continue to be in the future. No other regional alternatives exist.

1.3 Principal Alternatives

Because there is no realistic alternative to providing potable water to the population affected by the lead contamination other than replacing the water services, the principal alternative is the selected alternative. The principal alternative to water main replacement is to allow individual water supply wells which is not allowed under current City Ordinance or Kalamazoo County Health and Human Services Department Policies. The City is currently working with the State of Michigan to review additional source consolidation options.

1.4 Selected Alternative

1.4.1 Design Parameters

A comprehensive review of the City of Kalamazoo water system is contained in the 2016 City of Kalamazoo Water Reliability Study. The reliability study confirmed the City's ability to provide potable water at the desired pressures and flow rates to the project area.

1.4.2 Maps

A map of the proposed area for water service replacements is provided in Figure 1A and the proposed water main replacements in Figures 1B and 1C. These services and water mains will provide potable, municipal water for the residents along with meeting one of the goals of the ACO.

1.4.3 Schedule

Project Schedule:

The table below is a schedule for the proposed water distribution system improvement project. It would be funded under the third quarter of fiscal year 2023.

DWRF Project (3rd Quarter 2023)
Proposed Project Schedule

| Milestone | Date |
|-----------------------------------|--------------|
| Hold Public Hearing | April, 2022 |
| Submit Final Project Plan to MDEQ | June, 2022 |
| Receive Approval of Project Plan | August 2022 |
| User Charge System Approved | January 2023 |
| Plans and Specifications Approved | March 2023 |
| Bid Advertisement | March 2023 |
| Receive Construction Bids | April 2023 |
| EGLE Order of Approval | May 2023 |
| Begin Construction | June 2023 |
| Construction Completed | October 2024 |

1.4.4 Cost Estimates

Appendix A contains a detailed cost estimate for the proposed water system improvements. The estimated \$20.2 million dollar project costs includes both construction costs and construction administration/inspection costs.

1.4.5 Users Costs

The City of Kalamazoo is planning on funding the FY2023 project through the DWRF Program. If the estimated DWRF loan is \$20,200,000 with an estimated 1.875 % interest rate for a 20 year period, the expected annual debt service for the proposed project based on the DWRF loan criteria will be approximately \$1,220,520 per year.

The City typically bases its cost allocations on a Residential Equivalent Unit (REU). One REU is the designation given to a single family residential household which has an average water use of approximately 250 gallons per day and a water meter size of 1-inch. For businesses or industries with larger meters, the number of Residential Equivalent units is calculated based on the meter size serving that entity. The larger the meter, the larger the number of equivalent units assigned to that meter. The assigned REU is directly proportional to the larger meter's capacity as compared to the capacity of a residential meter.

With the current number of approximately 42,376 REU, there will be a usage cost increase of approximately \$28.80 per year per REU.

1.4.6 Disadvantaged Community

The City of Kalamazoo has received notification from EGLE staff the City is qualified as a Disadvantaged Community. This is included in [Appendix I](#).

1.4.7 Ability to Implement the Selected Alternatives

All proposed water system improvements will be designed and constructed in accordance with 10 States Standards, guidelines of the American Water Works Association, requirements of the Michigan Department of Environmental Quality (permitting agency), and City of Kalamazoo Standards.

The City of Kalamazoo already provides water to this area so no additional agreements or municipal authoritative actions are required.

Implementation of the proposed project is based on the assumption that the project will be financed by a low-interest loan from the DWRF program. City of Kalamazoo has the necessary legal, institutional, financial, and managerial resources available to ensure the construction, operation and maintenance of the proposed facilities.

1.5 Environmental Evaluation

Pursuant to EGLE guidelines, correspondence with cultural and environmental agencies indicating the location and scope of the proposed work activities is underway.

1.5.1 Historical/Archaeological

The proposed projects will not impact existing structures in work areas. Therefore, no historic or archaeological sites will be impacted by the construction of the proposed project. A historical and environmental evaluation was performed by Orbis Environmental Consulting who is a State of Michigan approved consultant for this work. Their report of no impact is included in Appendix B.

1.5.2 Water Quality

The proposed project will eliminate the potential source of lead and will provide the local residents with potable municipal drinking water which meets all current public drinking water standards.

1.5.3 Land/Water Interface

The proposed projects will not have any effect on local wetlands, floodplains, or surface water.

1.5.4 Endangered Species

The proposed project is located within and directly adjacent to existing road right-of-way and will not impact habitats or species within the project area. It is understood that with the exception of two bat species. Habitats of the Indiana bat (endangered) and the Northern long-eared bat (threatened) have the potential to be encountered as they typically roost under bark or in crevices in trees. No tree removals or trimming are planned as part of the project. If tree removal or trimming is required, it will be performed between October 15 and March 31.

1.5.5 Agricultural Land

All of the proposed water main will be placed within existing road right-of-way and will not impact any adjacent farmlands. Replacement of lead service lines will be with trenchless installation methods and so will not affect any surface features between the road right-of-way and homes.

1.5.6 Social/Economic Impact

The proposed projects will have a massively positive impact on the economics of the project area. Residents with services affected by high levels of lead have been recommended to not utilize the water for drinking or food preparation/canning. Given the multiple impacts of lead on humans and other organisms, there is an atmosphere of fear which reduced the current quality of life in the area and is potentially affecting property values. The proposed installation of copper water services and connection to a reliable, safe potable water supply will significantly reduce or eliminate the current social and economic impacts of the lead contamination.

1.5.7 Construction/Operational Impact

1.5.7.1 Natural and Man-made Features

The proposed water service installations will either follow the path of the existing service or be directly adjacent to the existing service. The service paths are previously disturbed space and measures will be taken during design and construction to minimize construction impacts.

1.5.7.2 Contamination

We have reviewed the environmental database maintained by the EGLE and there no know environmental hazards, land use restrictions, or other contamination which will affect the construction of the proposed project.

1.5.8 Indirect Impacts

1.5.8.1 Climate

Normal climatological information for the City of Kalamazoo was obtained from U.S. Climate Data in January 2021.

| <u>Averages</u> | <u>Spring</u> | <u>Summer</u> | <u>Fall</u> | <u>Winter</u> |
|------------------|---------------|---------------|-------------|---------------|
| High Temperature | 59 | 81 | 71 | 33 |

| | | | | |
|------------------------|------|-------|------|------|
| Low Temperature | 36 | 57 | 49 | 18 |
| Mean Temperature | 47 | 69 | 60 | 26 |
| Precipitation (inches) | 9.25 | 10.48 | 9.76 | 5.67 |

1.5.8.2 Air Quality

All of the projects are either rehabilitating or replacing existing water infrastructure. Therefore the projects will not negatively impact the air quality in the affected areas.

1.5.8.3 Wetlands

Replacement of lead service lines will be with trenchless installation methods and so will not affect any surface features between the road right-of-way and homes. The replacement of water mains will be using open-cut methods within existing public right-of-way. Neither of these activities will affect wetland areas.

1.5.8.4 Coastal Zones

None of the project areas is within a coastal zone.

1.5.8.5 Floodplains

FEMA floodplain area is indicated in Figure 4. No service replacement work is proposed within floodplain areas.

1.5.8.6 Inland Lakes and Streams

Replacement of lead service lines and water mains will be in public right-of-way and through private properties which will not affect any adjacent lakes or streams.

1.5.8.7 Natural or Wild and Scenic Rivers

We reviewed the State of Michigan Department of Natural Resources data and found that no designated wild, scenic or natural rivers or tributaries exist within the study area.

1.5.8.8 Other impacts

Once construction is completed, there should be no permanent, detrimental impacts to the community.

1.6 Mitigation Measures

1.6.1 Short Term Construction Related Mitigation

Standard procedures used in the construction industry will be included in the construction contract documents to mitigate construction activities.

1.6.2 Traffic Disruption

The proposed projects are located in road rights-of-way where streets and driveways will be impacted. All components of the project will be coordinated carefully with residences and businesses in the area, and construction methods will be selected to minimize disruptions.

Standard traffic and safety control devices such as barricades and lighted barrels will be in place to warn and protect residents during construction activities.

1.6.3 Dust and Noise

Dust control methods such as water and/or brine will be used to keep dust to a minimum. All public roadways will be swept regularly and maintained to assure residents access to the area. Construction equipment will be maintained in good condition to decrease noise.

1.6.4 Soil Erosion

Soil erosion and sedimentation control measures such as straw bales, sedimentation basins, and silt fence, will be part of the construction activities to prevent soil release and protect streams, wetlands, and existing storm water system.

1.6.5 Water Service Disruption

During construction of new water services and connection to home water systems, drinking water will be provided to the residents and connection to the municipal system made as quickly as possible.

1.6.6 Potential Loss of Wildlife / Habitat

Given the potential for tree removal within the road right-of-way, tree removal can be limited to the time periods between October 1 and March 31, in order to protect young bats that are not able to fly. If tree cutting is performed outside of this season, surveys of the trees will be performed in order to determine whether they are roost trees for the endangered Indiana bat or the threatened Northern long-eared bat.

1.6.7 Mitigation of Indirect Impacts

There are no major projected changes in the land use of the study area that would significantly impact potable water flows beyond the average daily flow projections and maximum daily flow projections provided in the City of Kalamazoo Water Reliability Study. The zoning and land use map for the City is illustrated in Figure 2. None of the proposed area has space where significant growth or land use changes are projected to occur.

All of the community's ordinances can be found on their website. General rules are the same as EGLE permits require, such as storm water containment, and soil erosion and sedimentation control.

1.7 Public Participation

As noted in the Project Need section, the proposed project work is in response to discovered lead contamination. The scope of the proposed project is based on the current testing data available and the public input received to date.

1.7.1 Public Meetings

In 2021, two public meetings were advertised and held to provide public information and receive public input regarding the lead service line replacements. The Project Plan was posted on the City's website. Meeting notices to all addresses in the project area were mailed on Wednesday March 24, 2021 and the meetings held on Tuesday April 12, 2021 and Thursday, April 19, 2021.

1.7.2 Formal Public Hearing

A Notice of Public Hearing was published prior to the Public Hearing. The Project Plan was posted on the city's website. A copy of the notice and an affidavit of publication are provided in Appendix C. The city received ____ comments and questions during the public comment period.

The public hearing describing the draft project plan was held at during the City Commission Meeting on Monday, April 18, 2022. A presentation was given by the City of Kalamazoo staff during which a description of the DWRF program and general comments on the Project Plan were presented. It was noted that the Project Plan contained cost estimates for projects and potential impacts. The Public Hearing transcript is provided in Appendix D.

1.7.3 Adoption of Project Plan

On Monday, April 18, 2022, the City of Kalamazoo passed a resolution adopting the Project Plan. A copy of the signed resolution is provided in Appendix E.

Figures

- Figure 1A Proposed Project Area
- Figure 1B Proposed Water Main Replacements
- Figure 1C Proposed Supply Consolidation Header
- Figure 2 Project Area Zoning Map
- Figure 3 Project Poverty Areas
- Figure 4 Floodway within the Project Area

Figure 1A - Project Limits

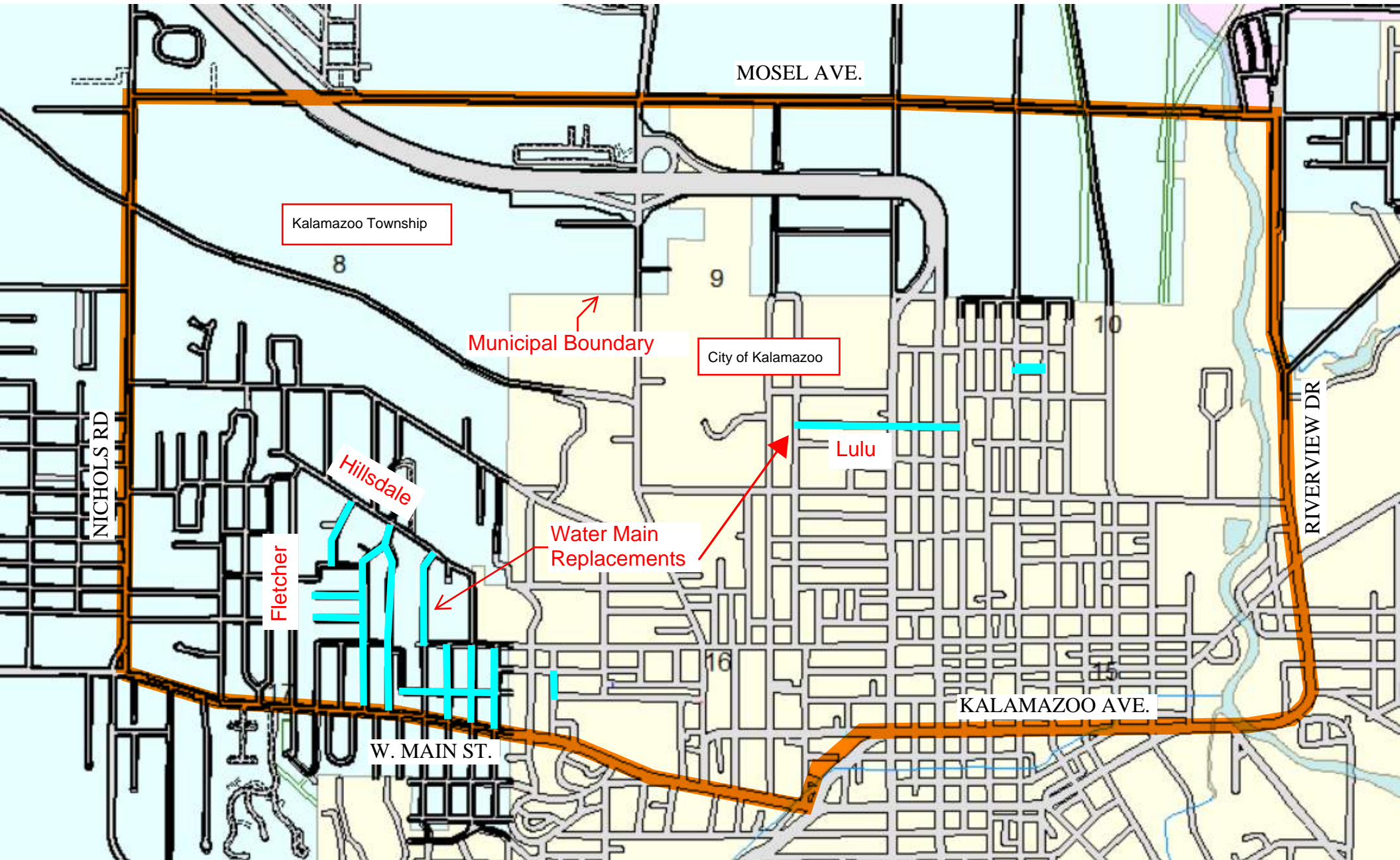
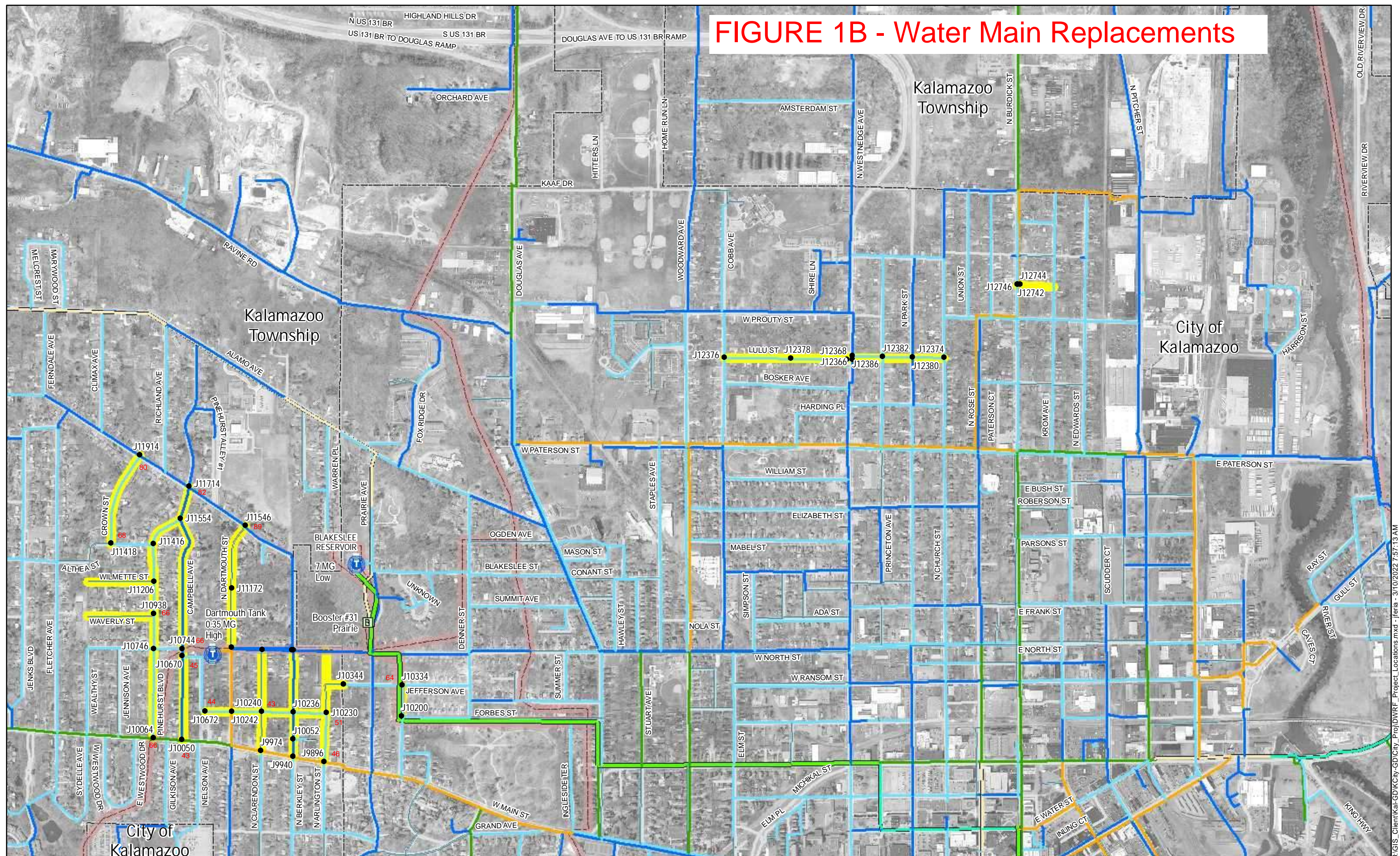



FIGURE 1B - Water Main Replacements



LEGEND

| | | | | |
|---|---------------------|-----|---|------------------------------|
| ● Model Junction | Water Main Diameter | 12" |  | Storage Tank/Reservoir |
|  | 4" | 16" |  | Pressure District Boundaries |
| | 6" | 20" |  | Municipal Boundary |
| | 8" | 24" | | |
| | 10" | | | |

CITY OF KALAMAZOO
KALAMAZOO, MICHIGAN

DWRP PROJECT AREAS

Prein&Newhof
March 2022
2180076

FIGURE 1C - Supply Consolidation Header

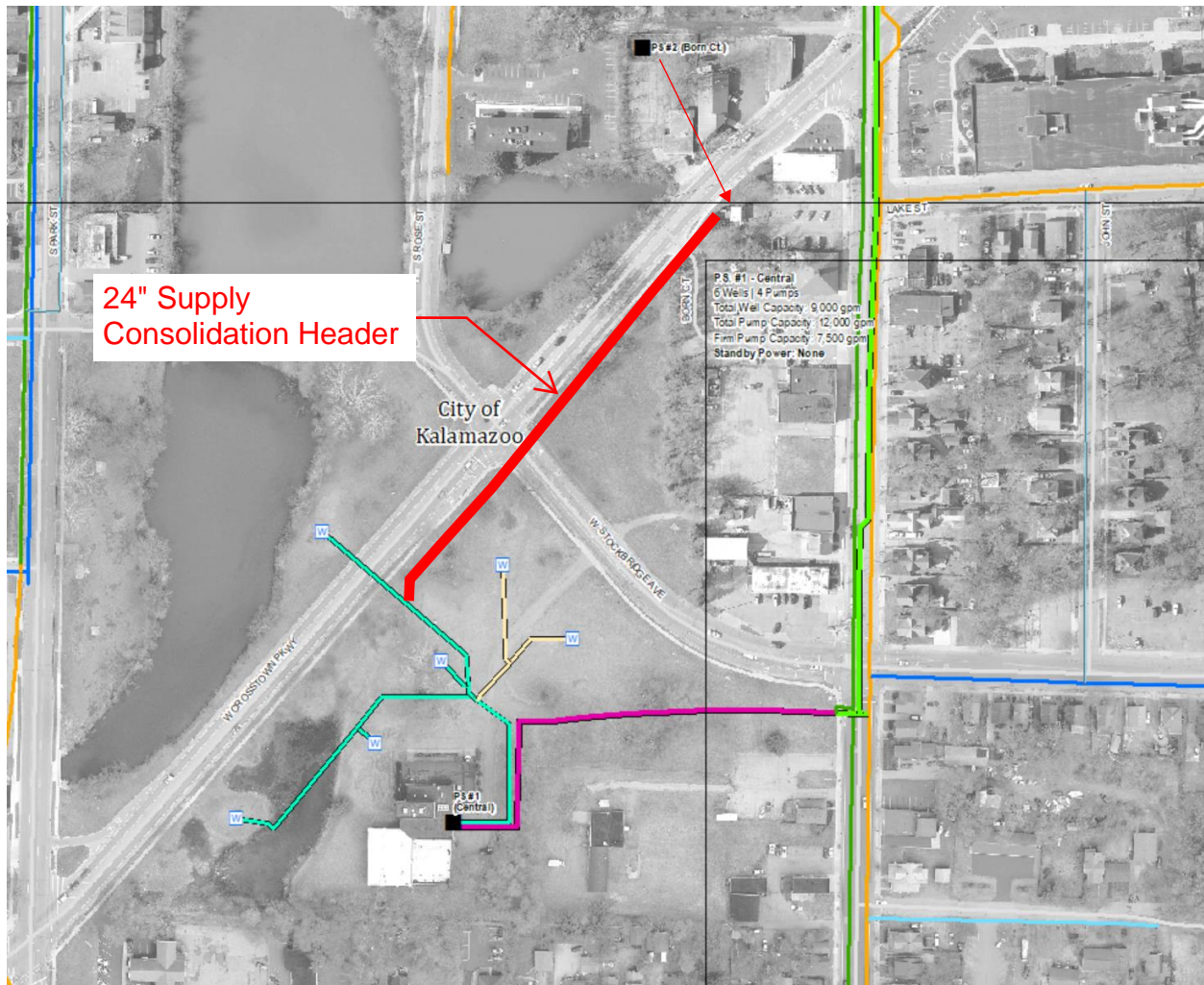
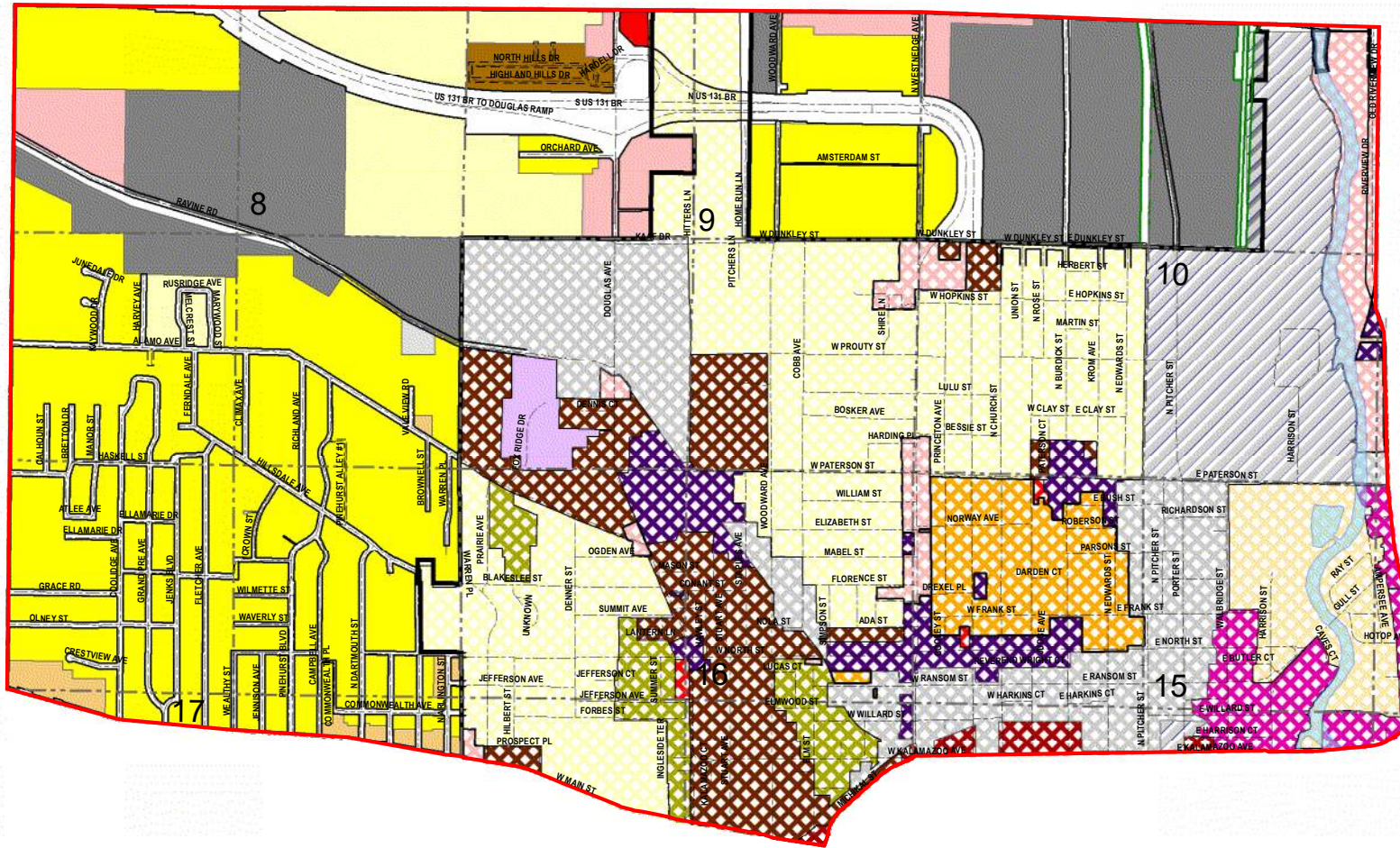


Figure 2 - Zoning Map



LEGEND

City of Kalamazoo Zoning

- CC - Commercial, Community
- CCBD - Commercial Central Business
- CMU - Commercial, Mixed use
- CN-1 - Commercial, Local Neighborhood
- CO - Commercial, Office
- M-1 - Manufacturing, Limited
- M-2 - Manufacturing, General
- PUD Planned Unit Development
- RD-1 - Residential, Duplex
- RM-15 - Residential, Multi-Dwelling
- RM-36 - Residential, Multi-Dwelling
- RMU - Residential, Mixed Use
- RS-5 - Residential, Single-Dwelling

Kalamazoo Township Zoning

- R-1 Single Family Residential
- R-2 Single and Two Family Residential
- RM-2 Multiple Family / Mixed Use
- MHP Mobile Home Park
- C-1 Local Commercial
- C-2 Commercial Corridor
- I-1 Light Industrial
- I-2 General Industrial

City of Kalamazoo
Kalamazoo County, MI

Zoning Map

Prein&Newhof

2200787

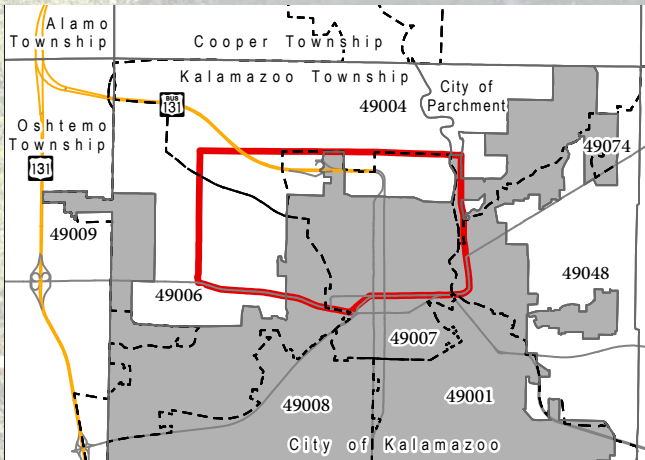


SCALE: 1" = 2,000'

Figure 3

City of Kalamazoo

Lead Service Line Replacement



Number of Services: 2,000

Project Cost: \$20 Million



% Under Poverty Level by Census Tract

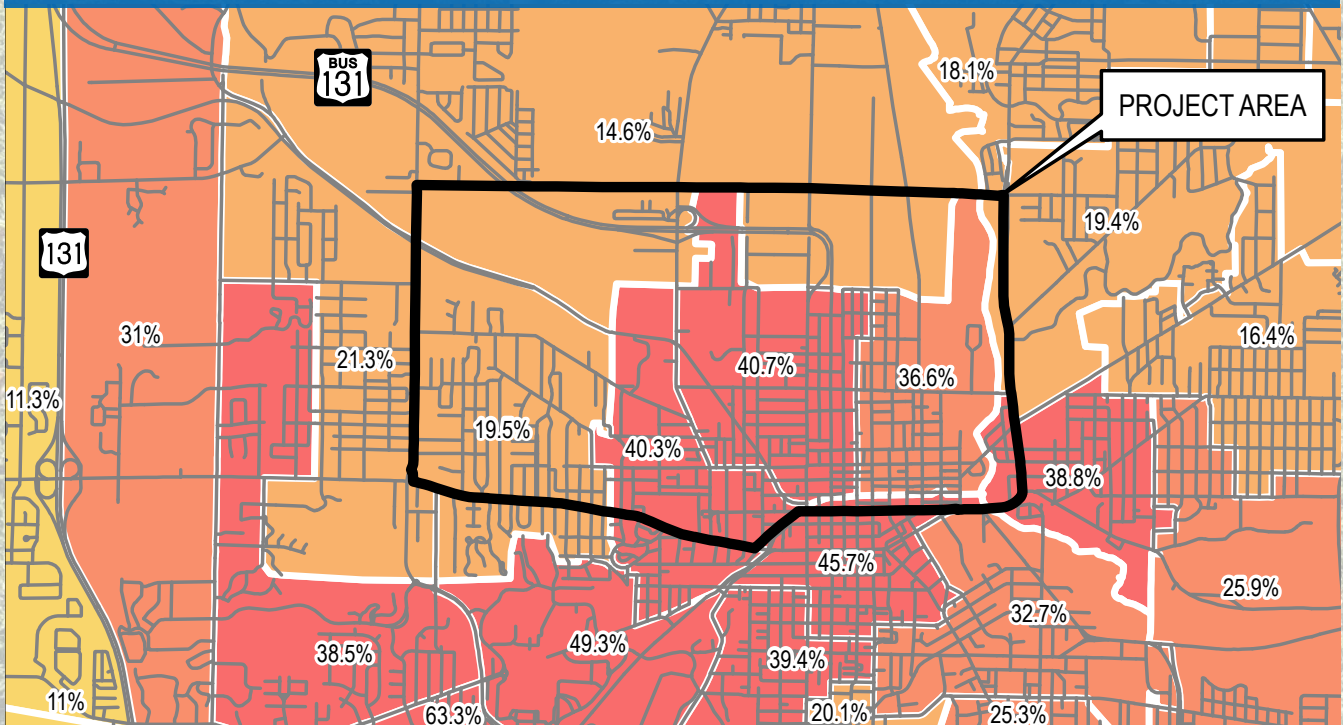
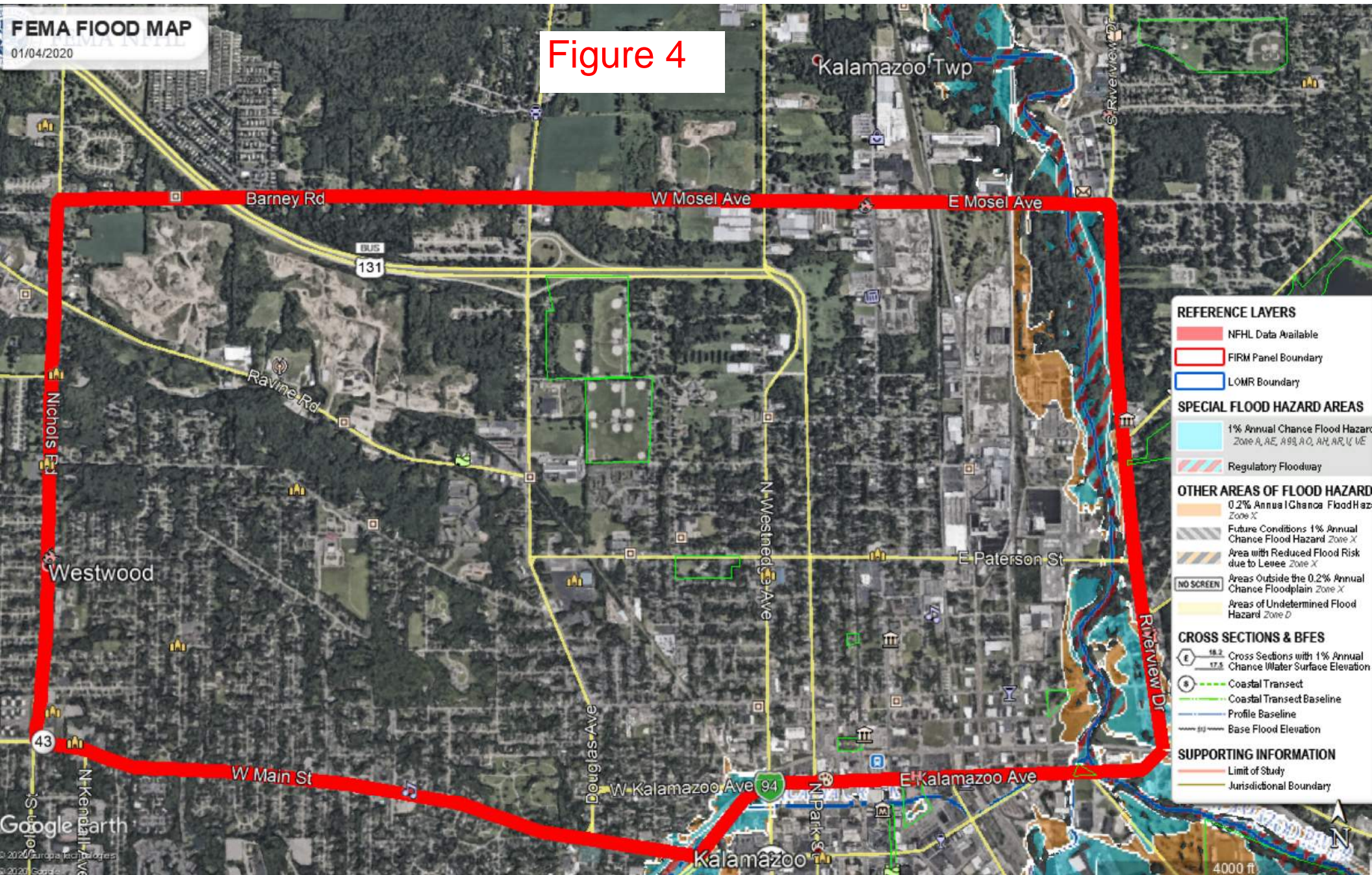


Figure 4



Appendix A

Project Cost

DRAFT

City of Kalamazoo FY 2023 DWRF Service Line and Water Main Replacement Project

| Item | Unit | Quantity | Unit Price | Total Cost |
|--------------------------------|-------|----------|------------|----------------------|
| Lead Service Line Replacement | | | | |
| Mobilization | LS | 1 | 50,000 | \$ 50,000 |
| Water Service Potholing | EA | 500 | 600 | \$ 300,000 |
| Water Service | EA | 1500 | 6500 | \$ 9,750,000 |
| Ford Box | EA | 300 | 1200 | \$ 360,000 |
| Meter Vault | EA | 50 | 4000 | \$ 200,000 |
| Plumber | Hours | 2000 | 195 | \$ 390,000 |
| Sidewalk Rem/Replace | SF | 40000 | 12 | \$ 480,000 |
| Curb Rem/Replace | LF | 4000 | 40 | \$ 160,000 |
| Pavement Rem/Replace | SY | 40000 | 80 | \$ 3,200,000 |
| Traffic Control | LS | 1 | 100000 | \$ 100,000 |
| Water Main Replacement | | | | |
| PS 2 to Central | LF | 800 | 300 | \$ 240,000 |
| Arlington | LF | 1000 | 250 | \$ 250,000 |
| Dartmouth | LF | 1300 | 250 | \$ 325,000 |
| Pinehurst | LF | 2750 | 250 | \$ 687,500 |
| Campbell | LF | 2320 | 250 | \$ 580,000 |
| Commonwealth Ave | LF | 1300 | 250 | \$ 325,000 |
| N Clarendon St | LF | 1050 | 250 | \$ 262,500 |
| N Berkley St | LF | 1100 | 250 | \$ 275,000 |
| Waverly & Wilmette | LF | 1800 | 250 | \$ 450,000 |
| Crown St | LF | 1000 | 250 | \$ 250,000 |
| Martin | LF | 380 | 250 | \$ 95,000 |
| Lulu | LF | 1350 | 250 | \$ 337,500 |
| | | | | \$ 19,067,500 |
| | | | | |
| Project Funding Administration | | | | \$ 19,500 |
| Project Design/Bid Documents | | | | \$ 268,750 |
| Construction Admin/Inspection | | | | \$ 757,000 |
| | | | | |
| Total Project | | | | \$ 20,112,750 |

DRAFT



November 4, 2020

Alyson Peacy, P.E.
Prein&Newhof
3335 Evergreen Drive
Grand Rapids, MI 49592

Re: Cultural Resources Desktop Review, Kalamazoo Waterline Improvement Project, Kalamazoo, Michigan

Alyson:

The records on file at the Michigan State Historic Preservation Office (MSHPO) show the following resources within one mile of the project components (study area).

Historic Structures

The records list 860 historic resources within a one-mile radius of the project area. Because the proposed waterline improvement project involves below-groundwork, this report will focus on the historic resources adjacent to the project area.

These 52 adjacent resources are predominately historic homes, the overwhelming majority of which are located on Kalamazoo Ave (Table 1). A small number of historic bridges and a single cemetery are also nearby.

There are also several historic districts near the project area and most of the individual properties within a one-mile radius of the project area are listed as contributing to the significance of these districts. Other historic structures in and around the project area include public and commercial buildings in the downtown area, buildings associated with the state hospital, fire houses, churches, a cemetery, and buildings associated with the original Western Michigan University.

Archaeological Sites

The records list 6 archaeological sites within one mile of the project area (Table 2). Four of these are prehistoric sites, one is historic, and one is a multicomponent site with prehistoric and historic period occupations. Functions of the prehistoric sites within the survey area include villages, mounds, cemeteries, garden beds, and camps. Time periods represented include the Archaic, Woodland, and Late Prehistoric. The historic site (20KZ69) is a Nineteenth Century trading post and the multicomponent site (20KZ311) includes a Woodland garden bed and a Nineteenth Century Potawatomi village. Only one of the six sites (20KZ26) has been evaluated for listing

on the National Register and it is currently listed. Three sites (20KZ69, 20KZ108, and 20KZ311) are located in or adjacent to the project area. None of these three sites have been evaluated for listing on the National Register.

Site 20KZ311 is the site of the Potawatomi Village of Match-e-nash-she-wish, present at the time of a treaty in 1827 (MSHPO Site Files 2020). Site 20KZ108 is a garden bed associated with 20KZ311 but the records state this site has been destroyed. The boundaries of the 20KZ311 are not well known and the area now lies within a heavily developed part of Kalamazoo. Site 20KZ69 is a nineteenth century trading post (Hastings Banner 1909). None of these sites have been field verified (MSHPO Site Files 2020).

Previous Cultural Resource Management Reports

Portions of the project area have been previously surveyed. The records list five surveys within the project area. Four of these involved archaeological surveys, none of which identified archaeological sites (Cremin 1988, Kingsley 1977, Weir and Demeter 1980, Weir et al. 1990a). The fourth involved an architectural survey performed concurrent with the archaeological survey by Weir and Demeter 1990a – this survey documented numerous historic structures and recommended additional work specifically for Nazareth College (Weir and Demeter 1990b).

Cremin, William M.

1988 Phase I Archaeological Assessment of the Mosel Avenue Bridge Replacement and Riverview Drive Modification Project in Kalamazoo County, Michigan. 86. Western Michigan University, Department of Anthropology.

Kingsley, Robert G.

1977 Archaeological Survey of Proposed Sewer Line Rights-of-Way and Treatment Facilities Site in the City of Kalamazoo, Michigan. 22.

Weir, Donald J. and C. Stephan Demeter

1980 Cultural Resource Investigation of the Hilltop and Douglas Avenue Sites, Kalamazoo, Michigan. R-2184. Commonwealth Associates, Inc.

Weir, Donald J., W.E. Rutter, and K.C. Taylor.

1990a Phase I Archaeological Site Location Survey and Reconnaissance Level Survey: M-43 Reconstruction, Kalamazoo County, Michigan. R-0029. Commonwealth Cultural Resources Group, Inc.

1990b Phase I Archaeological Site Location Survey and Reconnaissance Level Survey: M-43 Reconstruction, (Kalamazoo and Kalamazoo Township) Kalamazoo County, Michigan. R-0029. Commonwealth Cultural Resources Group, Inc.

CONCLUSIONS AND RECOMMENDATIONS

Available records list 6 archaeological resources within one mile of the project, including three within the project area. None of these three sites, however, have been field verified and these locations are in a heavily developed area in Kalamazoo.

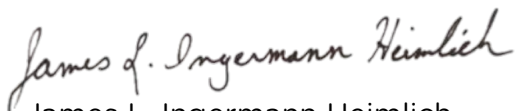
The records list dozens of historic structures adjacent to the project; however, the project is unlikely to affect these structures.

While the cultural context shows extensive occupation of the region, in and around, Kalamazoo from prehistoric through historic periods, the proposed project is unlikely to affect significant intact archaeological resources or historic structures because of the nature of the project activities. Specifically, excavation will be limited to replacing waterlines within existing roadways. The waterlines extending to individual structures will be installed in same place as the existing waterlines, without excavating new trenches.

Based on the results of the records review and the nature of the proposed project, we recommend no further work is necessary and a finding of No Historic Properties Affected is appropriate.

Regards,

J Ryan Duddleson
Senior Archaeologist



James L. Ingermann Heimlich
Architectural Historian

cc: #2009016

Attachments

Table 1 – Historic Structures Adjacent to the Project Area

Table 2 – Archaeological Resources within the Study Area

Figures 1a-f – Archaeological Resources – Select sections of Kalamazoo, MI USGS

Quadrangle – MSHPO Archaeological site files

REFERENCES CITED

Cremin, William M.

- 1988 Phase I Archaeological Assessment of the Mosel Avenue Bridge Replacement and Riverview Drive Modification Project in Kalamazoo County, Michigan. 86. Western Michigan University, Department of Anthropology.

Hastings Banner

- 1909 Historic Slater Mission of Prairieville: Leonard Slaters' Grave Near Ruins of Robinson's Trading Post: Indian Missionary and Pioneer Trader Well Known in Barry County in Early Days.

Kingsley, Robert G.

- 1977 Archaeological Survey of Proposed Sewer Line Rights-of-Way and Treatment Facilities Site in the City of Kalamazoo, Michigan. 22.

Michigan State Historic Preservation Office (MSHPO)

- 2020 Michigan Archaeological Site Files. On file at the Michigan State Historic Preservation Office, Lansing, Michigan.

Weir, Donald J. and C. Stephan Demeter

- 1980 Cultural Resource Investigation of the Hilltop and Douglas Avenue Sites, Kalamazoo, Michigan. R-2184. Commonwealth Associates, Inc.

Weir, Donald J., W.E. Rutter, and K.C. Taylor.

- 1990a Phase I Archaeological Site Location Survey and Reconnaissance Level Survey: M-43 Reconstruction, Kalamazoo County, Michigan. R-0029. Commonwealth Cultural Resources Group, Inc.
- 1990b Phase I Archaeological Site Location Survey and Reconnaissance Level Survey: M-43 Reconstruction, (Kalamazoo and Kalamazoo Township) Kalamazoo County, Michigan. R-0029. Commonwealth Cultural Resources Group, Inc.

Table 1

Known Historic Resources Adjacent to the Project Area

Cultural Desktop Review
Kalamazoo Waterline Improvement

| Site ID | Name | City | Street 1 | Current NR Status | Latitude | Longitude |
|---------|--|-----------|--|--|----------|-----------|
| P21025 | Henderson, Frank castle | Kalamazoo | 100 Monroe St | More Information Needed/Unevaluated | 42.29384 | -85.60344 |
| P23646 | Israel, Edward, Arctic Pioneer Informational Designation | Kalamazoo | Mountain Home Cemetery, bounded by Main St., Ingleside Terrace, and Forbes St. | | 42.29157 | -85.58851 |
| P23668 | Removal of Indians (1821-1840) Commemorative Designation | Kalamazoo | 459 N Burdick St | | 42.29504 | -85.58350 |
| P26220 | Crane, Edgar A., House | Kalamazoo | 324 Woodward Ave | More Information Needed/Unevaluated | 42.29365 | -85.59577 |
| P34334 | Darius Simmons Farm | Kalamazoo | 6858 East M N Ave. | More Information Needed/Unevaluated | 42.27559 | -85.56763 |
| P3519 | Rickman Hotel | Kalamazoo | 345 N Burdick St | Listed in the National Register of Historic Places | 42.29399 | -85.58347 |
| P47123 | Davis Block | Kalamazoo | 344-348 N Rose St | Eligible for Listing in the National Register of Historic Places | 42.29396 | -85.58464 |
| P47176 | 730 Village Street | Kalamazoo | 730 Village St | Contributing | 42.28307 | -85.59346 |
| P47232 | 834 West Kalamazoo Avenue | Kalamazoo | 834 W Kalamazoo Ave | Contributing | 42.29443 | -85.59479 |
| P47568 | 922 West Kalamazoo Avenue, house | Kalamazoo | 922 W Kalamazoo Ave | Contributing | 42.29440 | -85.59637 |
| P48880 | 621 West Kalamazoo Avenue, house | Kalamazoo | 621 W Kalamazoo Ave | Contributing | 42.29423 | -85.59107 |
| P49275 | 811 West Kalamazoo Avenue | Kalamazoo | 811 W Kalamazoo Ave | More Information Needed/Unevaluated | 42.29416 | -85.59434 |
| P49310 | 730 West Kalamazoo Avenue | Kalamazoo | 730 W Kalamazoo Ave | More Information Needed/Unevaluated | 42.29447 | -85.59306 |
| P49907 | 726 West Kalamazoo Avenue | Kalamazoo | 726 W Kalamazoo Ave | More Information Needed/Unevaluated | 42.29447 | -85.59300 |
| P50197 | 802 West Kalamazoo Avenue | Kalamazoo | 802 W Kalamazoo Ave | Contributing | 42.29444 | -85.59420 |

Table 1

Known Historic Resources Adjacent to the Project Area

Cultural Desktop Review
Kalamazoo Waterline Improvement

| Site ID | Name | City | Street 1 | Current NR Status | Latitude | Longitude |
|---------|--|-----------|---|-------------------------------------|----------|-----------|
| P51468 | Central Business District | Kalamazoo | Bounded by Park, RR to the North of Kalamazoo Ave, Walbridge and Business Loop I-94, West Cedar and West Lovell | More Information Needed/Unevaluated | 42.29157 | -85.58851 |
| P52560 | Capen, Charles C., House | Kalamazoo | 808 W Kalamazoo Ave | Contributing | 42.29444 | -85.59431 |
| P52563 | Crane, Edgar A., House | Kalamazoo | 324 Woodward Ave | Contributing | 42.29365 | -85.59577 |
| P52574 | Henderson Castle | Kalamazoo | 100 Monroe St | Contributing | 42.29384 | -85.60344 |
| P52700 | 1213 Grand Avenue, house | Kalamazoo | 1213 Grand Ave | Contributing | 42.29227 | -85.60109 |
| P52701 | 1219 Grand Avenue, house | Kalamazoo | 1219 Grand Ave | Contributing | 42.29226 | -85.60117 |
| P52715 | 609 West Kalamazoo Avenue, house | Kalamazoo | 609 W Kalamazoo Ave | Contributing | 42.29431 | -85.59133 |
| P52725 | 716 West Kalamazoo Avenue, house | Kalamazoo | 716 W Kalamazoo Ave | Contributing | 42.29447 | -85.59283 |
| P52726 | 717 West Kalamazoo Avenue, house | Kalamazoo | 717 W Kalamazoo Ave | Contributing | 42.29420 | -85.59282 |
| P52727 | 718 West Kalamazoo Avenue, house | Kalamazoo | 718 W Kalamazoo Ave | Contributing | 42.29447 | -85.59287 |
| P52728 | 722 West Kalamazoo Avenue, house | Kalamazoo | 722 W Kalamazoo Ave | Contributing | 42.29447 | -85.59293 |
| P52730 | 726 West Kalamazoo Avenue, house DUPLICATE | Kalamazoo | 726 W Kalamazoo Ave | Contributing | 42.29447 | -85.59300 |
| P52731 | 730 West Kalamazoo Avenue, house DUPLICATE | Kalamazoo | 730 W Kalamazoo Ave | Contributing | 42.29447 | -85.59306 |
| P52732 | 734 West Kalamazoo Avenue, house | Kalamazoo | 734 W Kalamazoo Ave | Contributing | 42.29446 | -85.59313 |
| P52733 | 802 West Kalamazoo Avenue, house DUPLICATE | Kalamazoo | 802 W Kalamazoo Ave | Contributing | 42.29444 | -85.59420 |
| P52734 | 811 West Kalamazoo Avenue, house DUPLICATE | Kalamazoo | 811 W Kalamazoo Ave | Contributing | 42.29416 | -85.59434 |
| P52735 | 814 West Kalamazoo Avenue, house | Kalamazoo | 814 W Kalamazoo Ave | Contributing | 42.29443 | -85.59442 |
| P52736 | 815 West Kalamazoo Avenue, house | Kalamazoo | 815 W Kalamazoo Ave | Contributing | 42.29416 | -85.59441 |

Table 1

Known Historic Resources Adjacent to the Project Area

Cultural Desktop Review
Kalamazoo Waterline Improvement

| Site ID | Name | City | Street 1 | Current NR Status | Latitude | Longitude |
|---------|--|-----------|-----------------------------|--|----------|-----------|
| P52737 | 821 West Kalamazoo Avenue, house | Kalamazoo | 821 W Kalamazoo Ave | Contributing | 42.29416 | -85.59453 |
| P52738 | 828 West Kalamazoo Avenue, house | Kalamazoo | 828 W Kalamazoo Ave | Contributing | 42.29443 | -85.59468 |
| P52739 | 832 West Kalamazoo Avenue, house | Kalamazoo | 832 W Kalamazoo Ave | Contributing | 42.29443 | -85.59475 |
| P52741 | 904 West Kalamazoo Avenue, house | Kalamazoo | 904 W Kalamazoo Ave | Contributing | 42.29441 | -85.59605 |
| P52742 | 917 West Kalamazoo Avenue, house | Kalamazoo | 917 W Kalamazoo Ave | Contributing | 42.29413 | -85.59625 |
| P52743 | 921 West Kalamazoo Avenue, house | Kalamazoo | 921 W Kalamazoo Ave | Contributing | 42.29413 | -85.59632 |
| P52744 | 926 West Kalamazoo Avenue, house | Kalamazoo | 926 W Kalamazoo Ave | Contributing | 42.29440 | -85.59644 |
| P52745 | 930 West Kalamazoo Avenue, house | Kalamazoo | 930 W Kalamazoo Ave | Contributing | 42.29440 | -85.59651 |
| P52746 | 936 West Kalamazoo Avenue, house | Kalamazoo | 936 W Kalamazoo Ave | Contributing | 42.29439 | -85.59662 |
| P52764 | 1022 West Main Street, house | Kalamazoo | 1022 W Main St | Contributing | 42.29223 | -85.59846 |
| P52785 | 200 Stuart Ave., house | Kalamazoo | 200 Stuart Ave | Contributing | 42.29199 | -85.59749 |
| P52825 | 106 Thompson Street, house | Kalamazoo | 106 Thompson St | Contributing | 42.29196 | -85.60107 |
| P52859 | 615 West Kalamazoo Avenue, building | Kalamazoo | 615 W Kalamazoo Ave | Not Eligible for Listing in the National Register of Historic Places | 42.29423 | -85.59094 |
| P52862 | 824 West Kalamazoo Avenue, building | Kalamazoo | 824 W Kalamazoo Ave | Not Eligible for Listing in the National Register of Historic Places | 42.29443 | -85.59461 |
| P52908 | 707-709 Elm Place, building | Kalamazoo | 707-709 Elm Pl | Contributing | 42.29236 | -85.59297 |
| P61382 | Mosel Avenue Bridge over Riverview Drive | Kalamazoo | Mosel Ave over Riverview Dr | More Information Needed/Unevaluated | 42.31786 | -85.57034 |

Table 1

Known Historic Resources Adjacent to the Project Area

Cultural Desktop Review
Kalamazoo Waterline Improvement

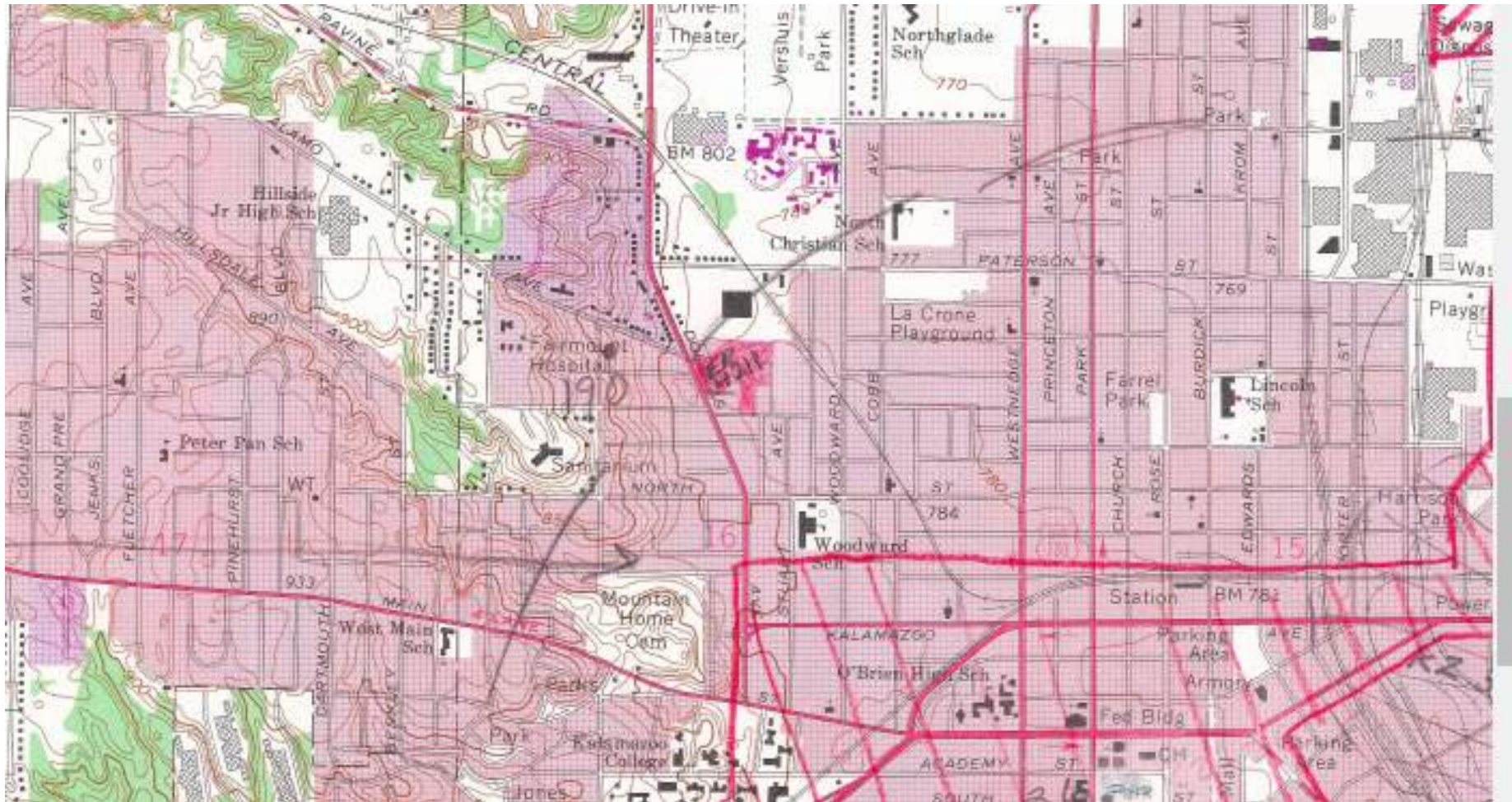
| Site ID | Name | City | Street 1 | Current NR Status | Latitude | Longitude |
|---------|---|-----------|--------------------------------|-------------------------------------|----------|-----------|
| P61383 | Mosel Avenue Bridge over Kalamazoo River (DEMOLISHED) | Kalamazoo | Mosel Ave over Kalamazoo River | More Information Needed/Unevaluated | 42.31785 | -85.57297 |
| P52712 | 602 West Kalamazoo Avenue, house | Kalamazoo | 602 W Kalamazoo Ave | Contributing | 42.29448 | -85.59185 |
| P52714 | 608 West Kalamazoo Avenue, house | Kalamazoo | 608 W Kalamazoo Ave | Contributing | 42.29448 | -85.59194 |

Table 2

Known Archaeological Sites in the Study Area

Cultural Desktop Review

| Site Number | Period | Culture | Function | NRHP Eligibility | Reference | In Study Area |
|-------------|------------------------------|-----------------------------|--------------------------|---|---|---------------|
| 20KZ17 | Prehistoric | Native American | Village, Mound, Cemetery | More Information Needed/No Determination Made | Hinsdale 1931 | X |
| 20KZ69 | Nineteenth Century | | Trading Post | More Information Needed/No Determination Made | Durant n.d., Banner 1901 | |
| 20KZ108 | Woodland | Native American | Garden Bed | More Information Needed/Unevaluated | Joseph 1981, Ray 1935 | X |
| 12KZ190 | Archaic | Native American | Camp | More Information Needed/Unevaluated | Mcallister 1983 | X |
| 20KZ26 | Woodland | Native American | Burial Mound | Listed on the NRHP | Joseph 1981, Thomas 1981, Praus 1955, Praus 1960, Finney 2004 | X |
| 20KZ311 | Woodland, Nineteenth Century | Native American, Potawatomi | Garden Bed, Village | More Information Needed/No Determination Made | Hinsdale 1931, Royce 1899, Peters 1980, Hubbard n.d. | X |

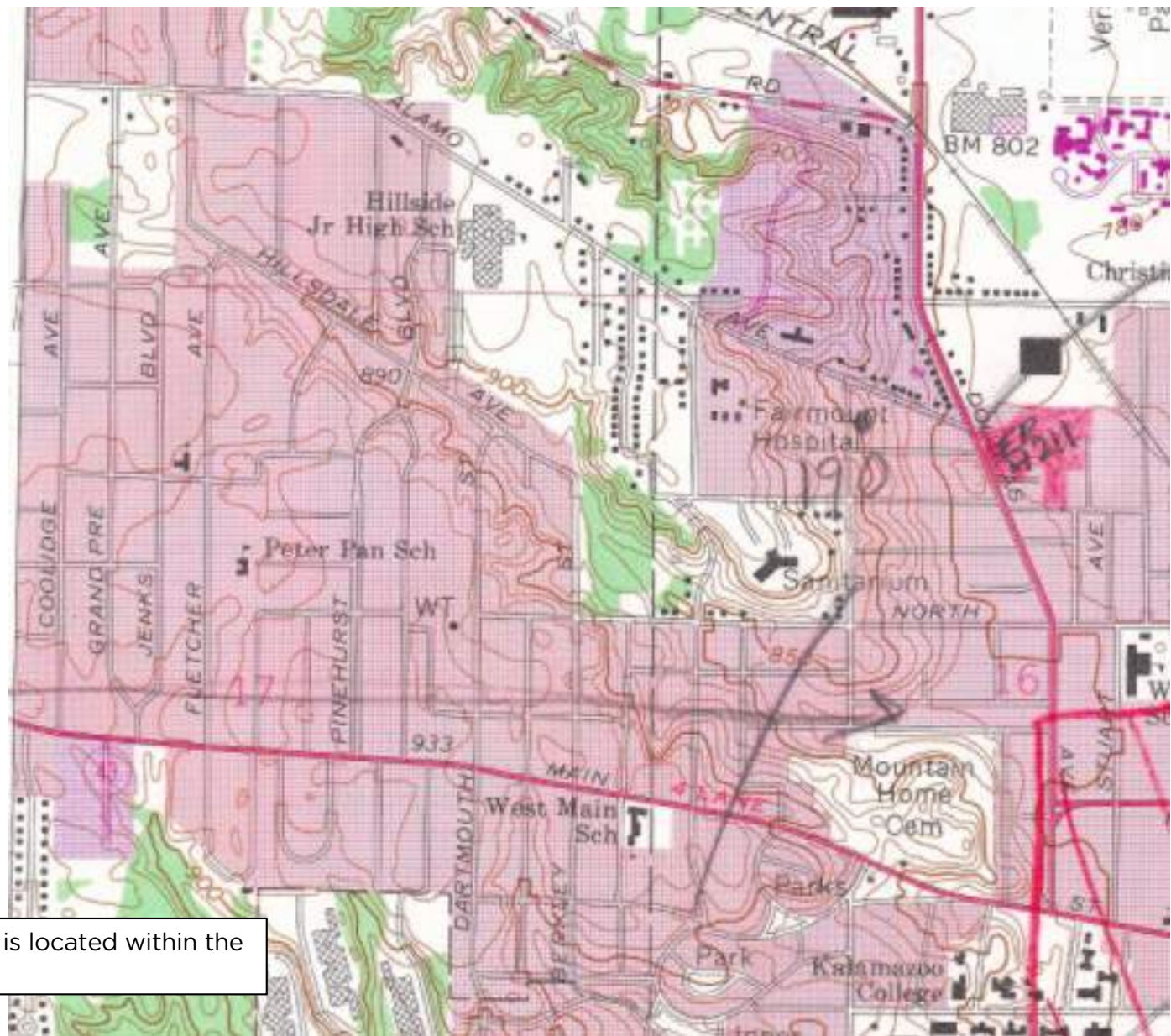


This section of project is located within the ROW of Main and Kalamazoo Streets



Cultural Resources Desktop Review
Waterline Improvement Project
Kalamazoo, Kalamazoo County, MI

Figure # 1a
Known Archaeological Sites
#2009016



Cultural Resources Desktop Review
Waterline Improvement Project
Kalamazoo, Kalamazoo County, MI

Figure # 1b
Known Archaeological Sites
#2009015

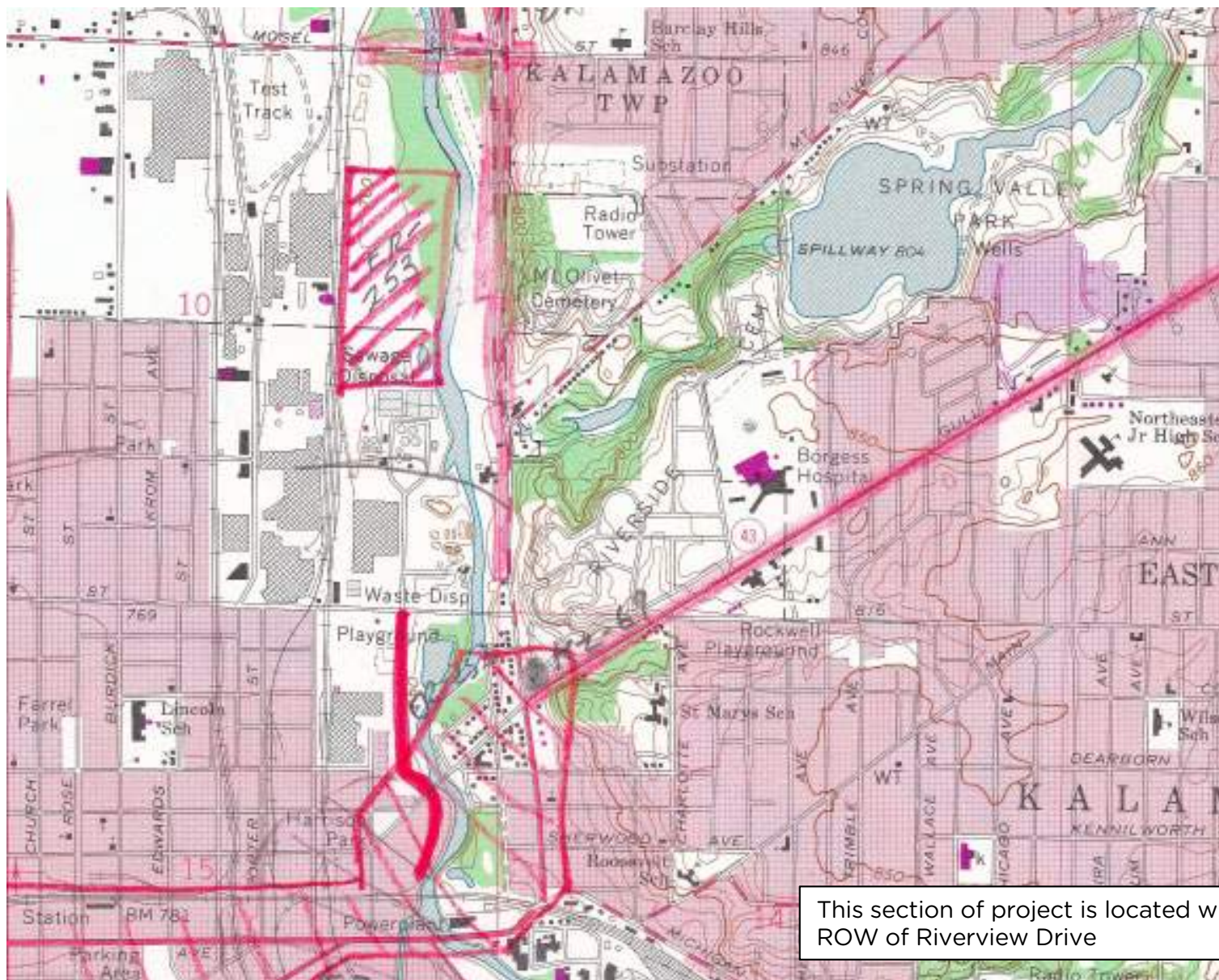


This section of project is located within the ROW of Main and Kalamazoo Streets



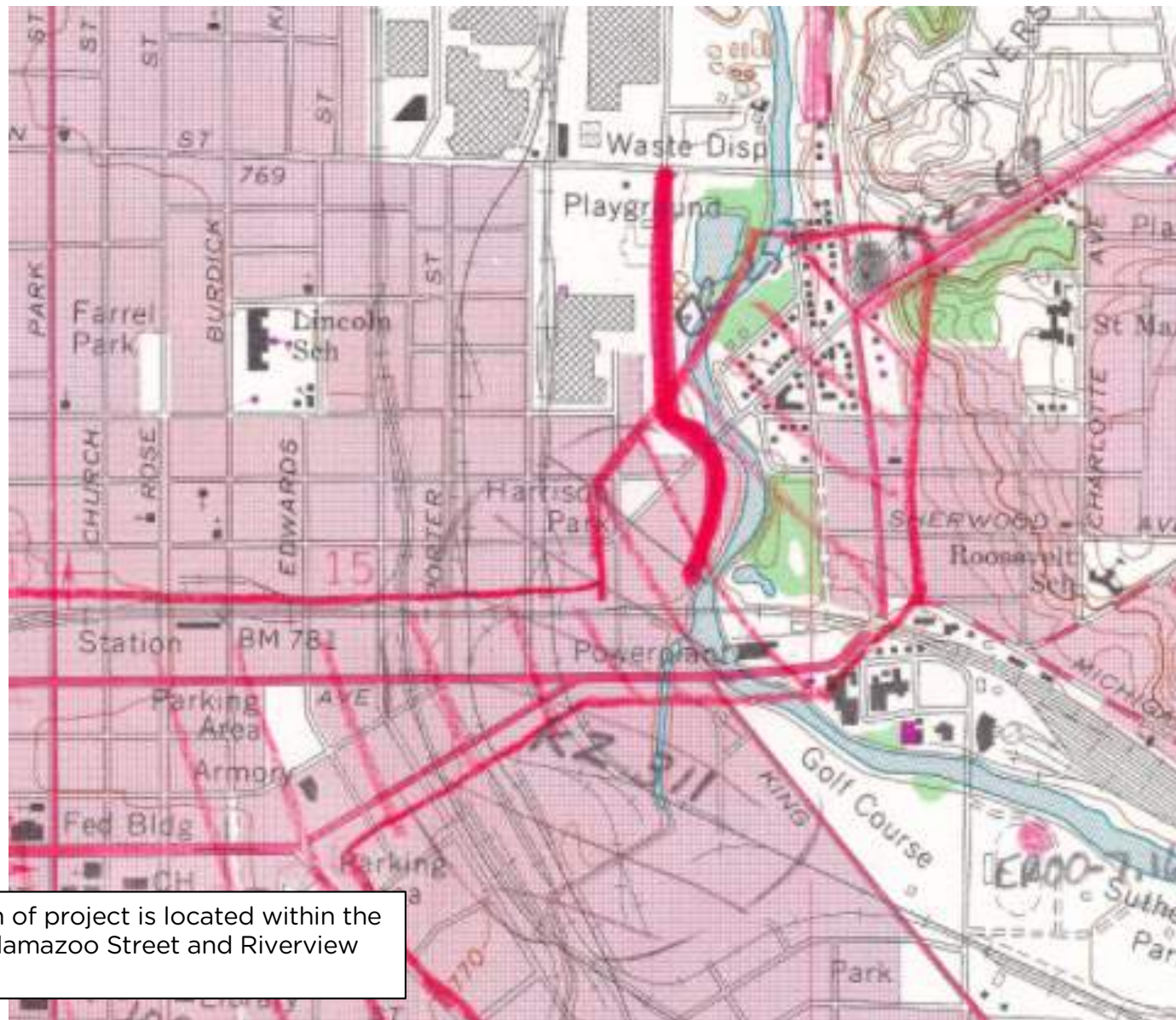
Cultural Resources Desktop Review
Waterline Improvement Project
Kalamazoo, Kalamazoo County, MI

Figure # 1c
Known Archaeological Sites
#2009016



Cultural Resources Desktop Review
Waterline Improvement Project
Kalamazoo, Kalamazoo County, MI

Figure # 1d
Known Archaeological Sites
#2009016



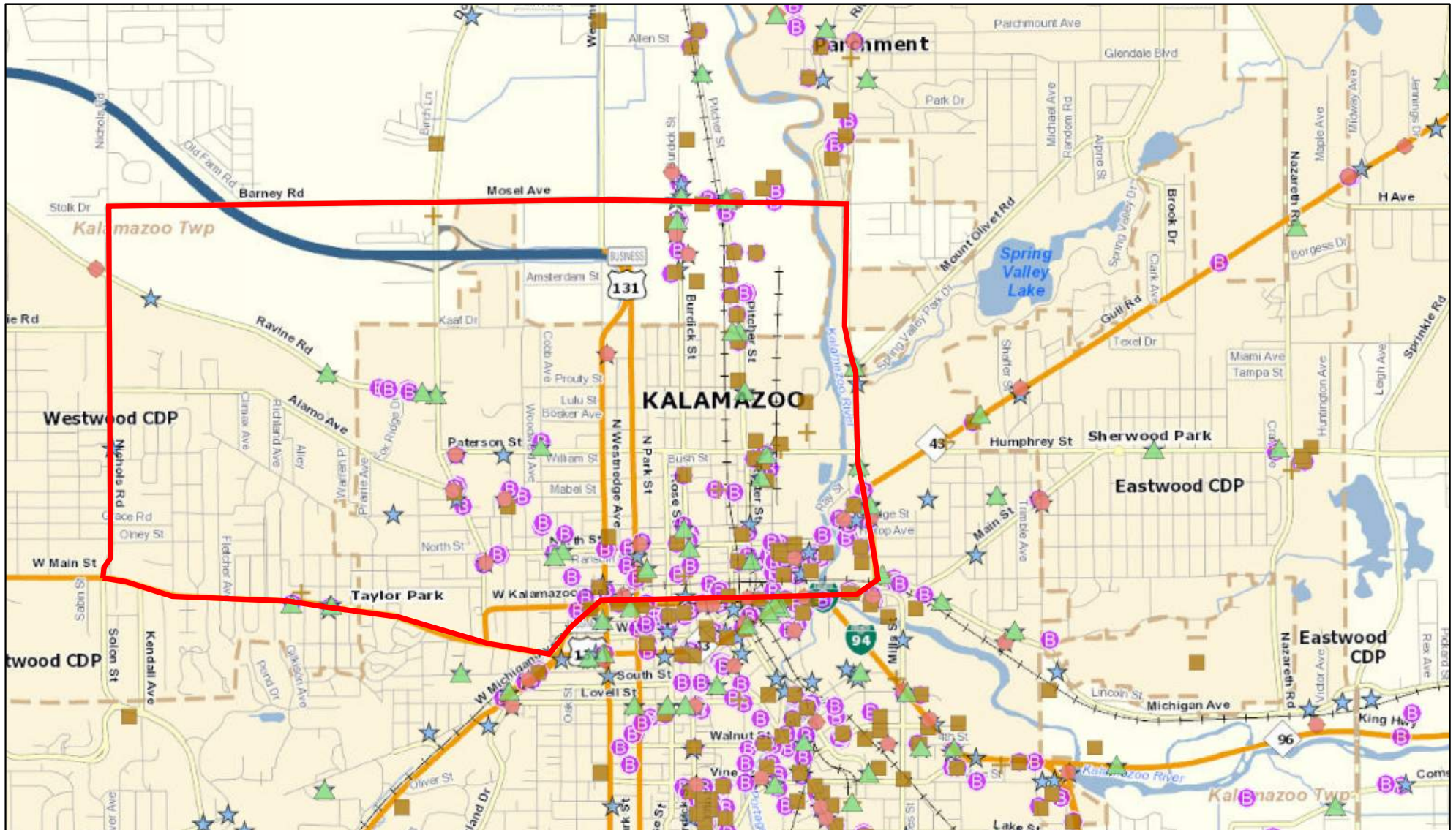
This section of project is located within the ROW of Kalamazoo Street and Riverview Drive









Cultural Resources Desktop Review
Waterline Improvement Project
Kalamazoo, Kalamazoo County, MI

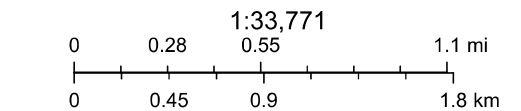
Figure # 1e
Known Archaeological Sites
#2009015

Environmental Mapper



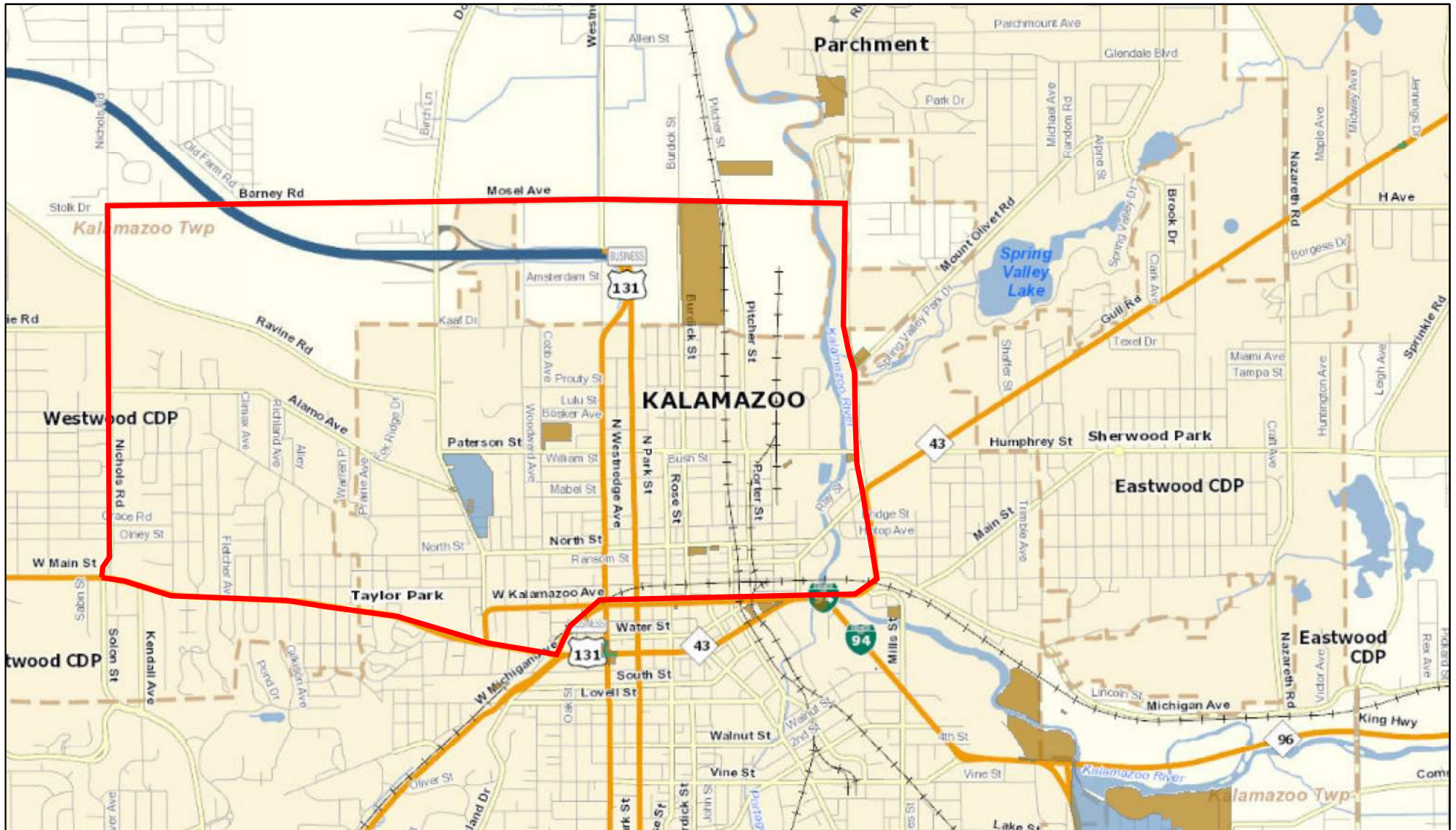
December 22, 2020

- | | | | |
|--|-----------------------------------|---|---|
|  | Baseline Environmental Assessment |  | Sites of Environmental Contamination (Part 201) |
|  | Closed Tanks |  | Open |
|  | Active Tanks |  | Closed |



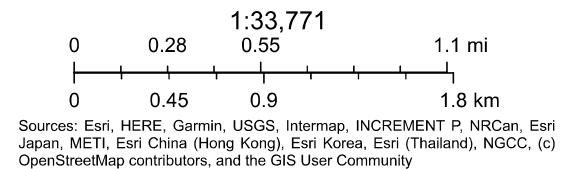
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

Environmental Mapper



December 22, 2020

- Michigan Department of Transportation - Point
- Notice of Approved Env. Remediation - Point
- Ordinance - Point



Appendix C

Public Hearing Notice and Affidavit

NOTICE TO BE ATTACHED FOLLOWING
CONFIRMATION OF NOTICE BEING PUBLISHED

DRAFT

Appendix D

Public Hearing Transcript – April 18, 2022

TRANSCRIPT TO BE ATTACHED FOLLOWING PUBLIC
HEARING

DRAFT

Appendix E

Project Plan Resolution

RESOLUTION TO BE ATTACHED FOLLOWING PUBLIC
HEARING

DRAFT

Appendix F

Disadvantaged Determination

DETERMINATION TO BE ATTACHED FOLLOWING
EGLE REVIEW

DRAFT