City of Jackson
Drinking Water State Revolving Fund
Project Plan

Project No. 210410
April 27, 2021

DRAFT

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fishbeck
Engineers | Architects | Scientists | Constructors

1515 Arboretum Drive, SE
Grand Rapids, Michigan 49546

616.575.3824 | fishbeck.com

City of Jackson
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Project Plan

Prepared For:
City of Jackson, Michigan

April 27, 2021
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Draft

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List of Abbreviations/Acronyms

CIP	Capital Improvement Plan
City	City of Jackson
DCLSLR	Disadvantaged Community Lead Service Line Replacement
DWSRF	Drinking Water State Revolving Fund
EGLE	Michigan Department of Environment, Great Lakes, and Energy
GIS	Geographic Information System
gpcd	gallons per day per capita
MG	million gallon(s)
MGD	million gallon(s) per day
MGY	million gallon(s) per year
WAMP	Water Asset Management Program
WTP	Water Treatment Plant

1.0 Introduction

In February 2021, the City of Jackson (City) retained Fishbeck to complete a Drinking Water State Revolving Fund (DWSRF) Project Plan for improvements to the City's water system. This Project Plan was prepared to meet the project planning requirements of the Michigan Department of Environment, Great Lakes, and Energy (EGLE). The improvements proposed in this Project Plan include replacing lead service lines in the City's water distribution system to comply with the Safe Drinking Water Act.

The City owns and operates a water supply, treatment, and distribution system that provides service to the City, a significant part of Blackman Township, small parts of Summit and Leoni Townships, and the Jackson State Prison.

As part of the 2020 Water Asset Management Program (WAMP), Fishbeck assisted the City with creating an inventory of the water service line materials on both the City and private property sides of property lines for the purpose of identifying the locations and quantities of lead, galvanized, or unknown material service lines. The City has submitted a preliminary distribution material inventory to EGLE. These service lines will need to be replaced according to the provisions of the 2018 revisions to the Lead and Copper Rule and a scheduled replacement has been developed within the Capital Improvement Plan (CIP) developed for the WAMP. This Project Plan proposes to replace the lead service lines in the selected project area.

The City is seeking to utilize the eligible $3 million Disadvantaged Community Lead Service Line Replacement (DCLSLR) Program allotment for construction. This funding focuses on replacing known lead service lines in disadvantaged communities. The total project cost is estimated at $3,300,000, with $300,000 of that total to be funded by the City separately.

2.0 Project Background

2.1 Delineation of Study Area

The City is located in Jackson County in south central Michigan and is 11 square miles in size. It is surrounded by rural land and smaller towns and is the only city in Jackson County.

The City owns and operates a water supply, treatment, and distribution system that serves the City, a significant part of Blackman Township, small parts of Summit and Leoni Townships, and the Jackson State Prison as shown in Figure 1. The current water distribution system is displayed in Figure 2. The proposed project is to replace the lead service lines within the project area displayed in Figure 3.

2.2 Land Use

Per the 2016 Community Master Plan, the existing land use within the City includes residential, commercial, industrial, recreational, and undeveloped. The largest land use in the City is residential, encompassing 33% of the land area. The commercial land use represents 14% of the City. The City's 745 acres of parkland comprise 11% of the land within the City limits. Industrial uses are 9% of the land area. The existing land use in Map 1 is represented using the current zoning map layers published by the Esri ArcOnline map services. Map 2 presents the planned land use.

Map 3 visually represents the population density within the study area. As indicated, the City is predominantly residential. The northeast and southwest quadrants are primarily residential and parks. The northwest corner is primarily commercial, with a small pocket of industrial use immediately south of the commercial district. The Grand River bisects the City, running from the north to the southeast. The industrial users are mostly along the southeast portion of the river, with a few along the river's north corridor.

2.3 Population Projections

Over the past several decades, the population in the City has been declining slightly, while the population of Jackson County has generally had an upward trend. As of the 2010 census, the City's population was 33,534. According to the U.S. Census Bureau, the City's population has decreased by 3.1% between April 2010 and July 2019. The City's 2016 Community Master Plan also documents this decline in population.

Table 2-1 indicates the City's population trends.

Table 2-1 – City of Jackson Population

Year	Population	Annualized % Change
1930	55,187	-----
1940	49,656	-1.05 %
1950	51,088	0.28 %
1960	50,720	-0.07 %
1970	45,484	-1.08 %
1980	39,789	-1.34 %
1990	38,303	-0.37 %
2000	36,316	-0.53%
2010[1]	33,534	-0.79 %
2014 Assumed[2]	33,200	-0.25 %
2015 Assumed [2]	33,218	+0.05 %
2020 Assumed[2]	33,305	+0.53%
2025 Projection[3]	32,056	-0.76%
2030 Projection[3]	31,600	-0.29%
2035 Projection[3]	31,259	-0.22%

[1]Population data through 2014 is from Census.gov
[2]Assumed based on the City's Comprehensive Plan
[3]Estimated from non-linear regression
Source: AECOM 2016 Reliability Study

Blackman Township is the largest adjacent water user. Approximately one-third of the population of Blackman Township is served by the City's Water Treatment Plant (WTP). Blackman Township census data was limited to 2000 and 2010. The future population was projected using the annualized percent change between 2000 and 2010. Table 2-3 presents Blackman Township's population.

Table 2-2 – Blackman Township Population

Year	Population	Annualized % Change	Serviced Population
2000	22,800	--	7,857
2010	24,051	0.55%	8,288
2015 Assumed	24,720	0.55%	8,518
2020 Projected	25,407	0.55%	8,755
2025 Projected	26,113	0.55%	8,999
2030 Projected	26,840	0.55%	9,249
2035 Projected	27,586	0.55%	9,506

Source: AECOM 2016 Reliability Study

Populations of 35 and 393 in Leoni and Summit Townships, respectively, are currently served by the City's WTP. The 2016 Reliability Study assumed these populations will not change in the future.

The City's WTP also serves the Jackson State Prison, which has a population of 7,950 as estimated by the 2015 Water System Sanitary Survey. The 2016 Reliability Study assumed the prison population served will not change in the future.

2.4 Water Demand

The City's 2016 Reliability Study projected water demands based on the total population served. The total projected population served is estimated as the sum of the projected City population, approximately one-third of Blackman Township's population, the Jackson State Prison population, the Leoni Township population, and the Summit Township population. In addition to customers, some water is lost or unaccounted for through main breaks, leaks, firefighting, hydrant flushing, or similar occurrences. Water demand projections are shown in Table 2-3.

Projected flows for 2020 through 2035 are based on anticipated usage stemming from population projections and the per capita pumpage rate of 137.0 gallons per day per capita (gpcd) (average of the 2010 and 2015 usage rates).

The percent of unmetered water was estimated for 2010 from the FY 2010 "sold as a % of pumped" value reported by the City. Similarly, the percent of unmetered water for 2015 was estimated from the FY 2015 "sold as a % of pumped" value. Projected unmetered water percentages were assumed to be consistent with the FY 2015 "sold as a % of pumped" value.

Table 2-3 – Water Demands

	2010	2015	2020[1]	2025[1]	2030[1]	2035[1]
Residential Water Sales						
City of Jackson Population	33,534	33,218	33,305	32,056	31,600	31,259
Total Population Served	50,199	50,113	50,437	49,432	49,226	49,142
Total Water Sales (MGD)	5.71	6.04	6.05	5.93	5.90	5.89
Total Water Sales (MGY)	2,085	2,204	2,208	2,164	2,154	2,150
Unmetered Water Usage						
Unmetered Water (MGD)	1.03	0.97	1.16	1.15	1.14	1.14
% of Unmetered Water	15.22%	13.84%	13.84%	13.84%	13.84%	13.84%
Total Annual Pumpage (MGY)	2,460	2,558	2,632	2,584	2,570	2,566
Average Day Demand (MGD)	6.74	7.01	7.21	7.07	7.05	7.03
Maximum Day Demand (MGD)	12.26	12.44	13.55	13.29	13.24	13.22
Fire Flow Demand (MGD)[2]	13.10	13.28	14.39	14.13	14.08	14.06
Maximum Hour Demand (MGD)[3]	12.74	16.12	16.58	16.26	16.22	16.17
Per Capita Pumpage (gpcd)	134.2	139.8	137.0	137.0	137.0	137.0

MGD million gallon(s) per day
MGY million gallon(s) per year
[1]Projected flows.
[2]Fire flow demand is calculated assuming the maximum day demand plus 3,500 gpm for 4 hours (0.84 million gallons [MG]).
[3]For the purpose of rate study, the maximum hour was assumed to be 2.3 times the average day demand.
Source: AECOM 2016 Reliability Study

The maximum day demand, including fire flows, projected for the next 20 years is 14.39 MGD. The City wells have a firm capacity of 33.6 MGD and the WTP has a capacity of 24 MGD. Given these production and treatment rates,

the City has the capacity to provide treated water to the City's distribution system well beyond the planning period.

The project proposed in this Project Plan will not affect the water demand.

2.5 Existing Facilities

The City's WTP is supplied by 16 water supply wells, with 12 active wells located near the WTP and 4 active wells located at Ella Sharp Park. The City's well system has a firm capacity (with the largest capacity well out of service) of 33.6 MGD. The WTP consists of two trains, each with primary solids contact clarifiers, secondary solids contact clarifiers, gravity filtration, and disinfection. The water is softened in the clarifiers via a lime/soda ash process to reduce the hardness to about 140 parts per million. The treated water is then conveyed to a 7.5-million-gallon ground storage reservoir to the east of the WTP and then pumped to the distribution system by the high service pump station.

The water distribution system is divided into three pressure districts: two high-pressure districts to the west and one low-pressure district.

The City's water system has more than 174 miles of water main within the City and 79 miles of water main in the townships it serves. However, the townships' water mains are not owned by the City. The water main sizes range from 4-inch to 24-inch. Cast iron is the most common water main material present in the system; the next most common is ductile iron and there are only a few plastic pipes. More than half of the system was installed in the 1910s and 1920s, according to the City's Geographic Information System (GIS) database. Many of the water mains in the system will reach or exceed their expected useful life within the next 20 years.

The water distribution system includes three elevated storage tanks, one ground storage reservoir, and three booster stations, as shown in Figure 2. The ground storage reservoir is located at the WTP. Two elevated storage tanks are owned by the City: East Tank and West Tank, each with a volume of 1.5 MG. The third elevated tank, Blackman Township Tank, is owned by Blackman Township and has a volume of 1.0 MG. Blackman Township also owns the Blackman Township Booster Station. The Kibby Road Booster Station and the Brighton Street Booster Station are owned by the City.

The water service lines in the City's distribution system in need of replacement consist of various materials including lead, galvanized, or in some cases unknown material. As a part of the 2020 WAMP, an inventory of the water service line material on both the City and private property sides of property lines was developed with a plan to completely replace all such identified service lines over the 35-year schedule proposed in the WAMP. This DWSRF Project Plan focuses on the replacement of lead service lines within the selected project area displayed in Figure 3.

2.6 Summary of Project Need

2.6.1 System Needs

Lead water service lines are a known potential public health hazard. Many lead service lines still exist in older portions of the distribution system. These lead service lines need to be eliminated in the next 20 years to meet the requirements of the Safe Drinking Water Act. The 2018 revisions to the Lead and Copper Rule requires municipalities to replace a minimum of 5% of their lead service lines annually starting in 2021, including those service lines traditionally owned by the customer.

An inventory of the water service lines on both the City and private property sides was created as a part of the 2020 WAMP. The service lines fall in the following categories:

1. Water service line material is non-lead on both sides of the property line.

2. Water service line material is non-lead (copper, ductile iron, cast iron) from the water main to the property line and lead on the private property.
3. Water service line material is non-lead (cast iron, copper, ductile iron) from the water main to the property line and unknown material on the private property.
4. Water service line material is lead on both sides of the property.
5. Water service line material is unknown on both sides of the property.

The proposed project will focus on a subset of Category 2; where the water service line is copper from the water main to the property line, the lead piping on the private property will be replaced. These service lines make up the selected project area and are displayed in Figure 3. While the work is being performed, if lead service lines are encountered on the City side of the property line, they will also be replaced.

2.6.2 Compliance with Drinking Water Standards

In 2018, the State of Michigan adopted Michigan Administrative Code Rule 604f entitled "Treatment Techniques for Lead and Copper" pursuant to the Safe Drinking Water Act, Act 399 of Public Acts of Michigan of 1976, as amended ("Act 399"). The Lead and Copper Rule requires a reduction in the threshold of allowable lead in water to 12 parts per billion by 2025. Water supplies with lead service lines, regardless of lead action level values must replace all lead service lines at an average rate of 5% per year, not to exceed 20 years, or in accordance with an alternate schedule incorporated into an asset management plan and approved by EGLE.

2.6.3 Orders of Enforcement Actions

No court or enforcement orders, or written enforcement actions have been issued to the City regarding its water system.

2.6.4 Drinking Water Quality Problems

The aesthetic quality of the water produced by the City's WTP is generally good; there are no known drinking water problems in the distribution system.

2.6.5 Projected Needs for the Next 20 Years

As part of the 2020 WAMP, 5- and 20-year CIPs for horizontal assets in the system were developed. The CIPs include lead service line replacement.

The City will use its own staff to complete the replacements needed in the City. The planned replacement of lead service lines by the City staff represents a significant amount of work. Under a 35-year timeline, the work can be finished at a more reasonable pace than under a 20-year timeline starting in 2023. An annual lead service line replacement cost of $1,979,763 is estimated for a 35-year period of lead service line replacement. A 20-year replacement would cost considerably more and cause undue burden on the City's customers. It should also be noted that for the 20-year replacement plan, the available man-hours at the City would have to be increased by hiring additional staff in comparison to the 35-year replacement plan.

The costs for the proposed 35-year timeline for lead service line replacement are included in the CIP in Appendix 1. This Project Plan will focus on the selected area indicated in Figure 3.

3.0 Analysis of Alternatives

3.1 No Action

This alternative is not a considered because the lead service lines must be replaced within 20 years to comply with the Safe Drinking Water Act.

3.2 Optimum Performance of Existing Facilities

Lead is no longer an acceptable material for water service lines; therefore, this alternative is not viable.

3.3 Construction Alternative – New Service Lines

The total number of lead service lines in the selected project area is approximately 1,860, as identified in Figure 3. The City intends to self-perform the complete lead service replacements on the City and private property sides of the property lines with new copper services. Replacements in the selected project area will continue to be made until the $3 million allotted under the DCLSLR Program is depleted.

3.4 Regional Alternative

A regional alternative is not applicable for the lead service line replacement project since the service line replacements are required to comply with the Safe Drinking Water Act.

4.0 Principal Alternatives

The Construction Alternative, new service lines, was evaluated as the principal alternative.

4.1 Monetary Evaluation

A cost analysis was completed for the Construction Alternative. City staff will self-perform the lead service line replacements. The project cost summary for the principal alternative is presented in Table 4-1.

Table 4-1 – Estimated Project Cost Summary for New Service Lines

Item	Initial Capital Cost	Design Life (years)	Salvage Value
New Copper Services	$3,000,000	50	$1,800,000
Subtotal: Estimated Construction Cost	$3,000,000		
Administration, Engineering, Contingency	$300,000*		
Total: Estimated Project Budget	$3,300,000		

*This City plans on funding this amount separately.

A present worth analysis using an interest rate of 0.5% provided by EGLE was completed for the Construction Alternative and for the No Action Alternative, as summarized in Table 4-2. The No Action Alternative has no associated capital costs. Sunk costs are not included in the analysis.

Table 4-2 – Present Worth Analysis

	New Service Lines		No Action Alternative	
	Cost/Value	20-Year Present Worth	Cost/Value	20-Year Present Worth
Capital Cost	$3,300,000	$3,300,000	$0	$0
Operation and Maintenance Cost/Year	$0	$0	$0	$0
Salvage Value	$1,800,000	($1,630,000)	$0	$0
Total Worth		$1,670,000		$0

4.2 Environmental Evaluation

4.2.1 Cultural Resources

The lead service line replacement project has no direct expected historical or archeological impacts. The historical sites within the City are summarized in Appendix 2.

4.2.2 Natural Environment

No long-term impacts to the natural environment are anticipated. Where applicable, construction will occur during the typical construction season for underground work.

4.3 Mitigation

The impact on air quality will be controlled to the greatest extent possible by limiting construction to regular working hours during the week and ensuring proper maintenance on heavy equipment to reduce exhaust emissions. Dust will be controlled by appropriate measures such as the use of calcium chloride or water.

4.4 Implementability and Public Participation

The City will cover the cost of the work on private property. No expense to the property owners is anticipated for lead service replacement. Prior to construction, project signs will be posted in the project area and letters will be sent to property owners detailing the project. Access to driveways on private property will be maintained to the greatest extend possible. The property owners/residents will be notified in advance about the proposed project and anticipated water service interruption by door hangers or flyers left at the front door. Instructions to the property owners/residents will be provided for these planned replacements.

4.5 Technical Considerations

Lead service line compliance requirements are met.

4.6 Residuals

This proposed project will have no impact on residuals.

4.7 Industrial/Commercial/Institutional

Not applicable.

4.8 Growth Capacity

Not applicable.

4.9 Contamination

Map 4 shows the location of the contaminated sites within the service area. No adverse site conditions are anticipated for the lead service line replacements. The lead service lines will either abandoned in place or removed and recycled or disposed based on the method of installation of the new copper services.

5.0 Selected Alternative

The selected alternative includes replacement of the existing lead service lines with new copper service lines within the selected project area. This alternative will address lead service compliance required by the Safe Drinking Water Act. The selected alternative is detailed in Figure 3.

5.1 Design Parameters

A total 1,860 lead service lines have been identified within the selected project area. The City will perform the lead service line replacements based on its ability to schedule the replacement with the property owners/residents and until the allotted $3 million DCLSLR Program funds are exhausted. EGLE-approved material and methods of installation will be utilized to perform the replacements.

5.2 Project Map

The selected project area within the City for lead service line replacements is included in Figure 3.

5.3 Schedule for Design and Construction

The project schedule is consistent with the quarterly DWSRF deadlines. The project is currently being aligned for the third quarter of Fiscal Year 2022. The project is planned to commence beginning in July of 2022 based upon the EGLE order of approval. The City will self-perform the project. The project is anticipated to be completed by Fall of 2026.

5.4 Cost Estimate

The estimated costs per year for the proposed project is provided in Table 5-1 The costs provided are in January 2021 dollars.

Table 5-1 – Summary of Estimated Costs

Project	Estimated Project Dates	Total Estimated Project Costs
Private Lead Service Line Replacement (Year1)	July 2022–October 2022	$660,000
Private Lead Service Line Replacement (Year2)	April 2023–October 2023	$660,000
Private Lead Service Line Replacement (Year 3)	April 2024–October 2024	$660,000
Private Lead Service Line Replacement (Year 4)	April 2025–October 2025	$660,000
Private Lead Service Line Replacement (Year 5)	April 2026–October 2026	$660,000
	Total	$3,300,000

The City will utilize the $3 million in DCLSLR Program funds for construction of the lead service line replacements. The City will use separate funds for engineering, administration, and legal costs.

5.5 User Costs

The annual debt service payment for the $3.3 million funding at 1.875% for 20 years is estimated to be $199,391. This increase is an estimated $10.50/per quarter on the average residential bill using an estimated 1,800 cubic feet/quarter.

The City is seeking the DCLSLR Program funds for the proposed project and intends to utilize the allocated $3 million dollars to offset a user rate increase due to the proposed project.

5.6 Disadvantaged Community

The disadvantaged community qualification is determined for each loan that is applied for by the community. A Disadvantaged Community Status Determination Worksheet was submitted to EGLE along with the Intent To Apply. EGLE has determined that the City meets the disadvantaged community qualifications and is eligible for the DCLSLR Program funding of up to $3 million.

5.7 Ability to Implement the Selected Alternative

The City has the ability to implement the lead service line replacement. The City owns and operates the water supply, treatment, and distribution system. The proposed project for lead service line replacement will occur within the City. No amendments to any water service agreements will be necessary for the DCLSLR Program funding. All financial and loan-related work will be handled by the City's Financial Department.

6.0 Environmental Evaluation

6.1 Historical/Archeological/Tribal Resources

To identify sites of historical and cultural significance, the City's 2016 Community Master Plan historic resources and the National Register of Historic Places by county were reviewed. Several historical sites were identified throughout the City and are included in Appendix 2. No direct historical or archeological impacts are expected.

The Michigan State Historical Preservation Office and the Tribal Historic Preservation Officers were not contacted since the proposed project has been deemed a non-equivalency project.

6.2 Water Quality

The proposed project will meet compliance requirements of the Safe Drinking Water Act. The proposed project will not affect surface water or groundwater quality or quantity. A map of the major surface waters is depicted in Map 5.

6.3 Land/Water Interface

Map 6 depicts the locations of wetlands. No construction work is anticipated within wetland areas. The soils map is included in Map 7. The proposed project will not have any negative impacts on the wetlands.

The extent of the 500-year flood boundary as defined by the National Flood Insurance Program consists primarily of the areas immediately adjacent to the Grand River. Map 8 presents both the 100-year and 500-year floodplains. No negative impacts on the flood boundaries are expected as a result of the proposed project.

6.4 Endangered Species

The federally listed endangered and threatened species for Jackson County (2018) were reviewed and are detailed in Table 6-1. Endangered or threatened species are defined as those species that are or could become endangered or threatened and, therefore, are protected under the Endangered Species Act. The objective of the act is to preserve and restore species threatened with extinction. The Michigan Natural Features Inventory by county was also reviewed. It has additional listings of fauna and flora with a state status of endangered, threatened, or special concern and is included in Appendix 3.

Table 6-1 – Jackson County Endangered or Threatened Species

Name	Status
Mitchell's Satyr (*Neonympha mitchellii mitchellii)* (Invertebrate)	Endangered
Indiana Bat (Myotis sodalis)	Endangered
Northern Long-Eared Bat (*Myotis septentrionalis*)	Threatened
Eastern Massasauga (*Sistrurus catenatus*)	Threatened
Poweshiek Skipperling (*Oarisma poweshiek*)	Endangered

The probability of threatened, endangered, or special concern species can be seen on Map 9. The proposed project will occur in urban areas where no suitable wildlife habitat is present and construction work will be limited

to existing water service lines that are connected to the system. No tree removal is anticipated that could have potential impacts to these species.

6.5 Agricultural Land

Prime farmland locations are depicted in Map 10. The proposed project activities will not negatively impact existing land use.

6.6 Social/Economic Impact

The replacement of lead service lines in the water distribution system will result in direct cultural and social benefits. Public health and safety will benefit from the proposed project by meeting the compliance set forth by the Safe Drinking Water Act.

6.7 Construction/Operational Impact

Nearly all the work will take place behind the curb lines. Though many of the streets are tree-lined, no tree removal is anticipated. All grass parkways will be restored in-kind. No adverse impacts to major street traffic patterns are anticipated. Construction for projects of this type is generally limited to the hours 7:00 a.m. to 7:00 p.m. Monday through Friday, and 7:00 a.m. to 1:00 p.m. on Saturday. Vehicular and pedestrian access to all properties will be maintained throughout construction.

6.8 Indirect Impacts

6.8.1 Changes in Development

The proposed project will not facilitate any new areas of development.

6.8.2 Changes in Land Use

The proposed project will not have an impact on existing or future land use.

6.8.3 Changes in Air or Water Quality

The proposed project will not impact air or surface water quality.

6.8.4 Changes to Natural Setting or Sensitive Ecosystems

The proposed project will not have an impact on the natural setting or sensitive ecosystems.

6.8.5 Changes to Aesthetic Aspects of the Community

The proposed project will not have long-term aesthetic changes because the work is belowground, and the land will be restored post-construction.

6.8.6 Resource Consumption

Resource consumption in the form of materials, labor, and equipment will be required to replace the lead water service lines.

7.0 Mitigation Measures

The proposed project was evaluated for long-term adverse impacts. There are no long-term negative impacts associated with the construction activities. However, suitable mitigation measures will be considered to ensure any irreversible adverse impacts on the environment.

Measures that will be taken to avoid, eliminate, or mitigate potential short-term environmental impacts include the following:

- Traffic: Use of designated traffic routes for construction traffic, as well as flagmen, warning signs, barricades, and cones.
- Air emissions: Use of calcium chloride or water for dust control and proper maintenance of heavy equipment to reduce exhaust emissions.
- Noise control: Use of designated daytime work hours, use of mufflers on all equipment, and minimizing work on weekends and/or holidays.
- Restoration: Areas of grass, curb, sidewalk, and pavement that are disturbed as a result of the proposed project will be restored as closely as possible to their original appearance.

Long-term environmental impacts are not anticipated for the proposed project. There is no tree removal or adverse impact on the sensitive environmental features anticipated. However, measures will be taken to avoid, eliminate, or mitigate potential long-term environmental impacts. Using vacuum boring excavation, hand digging, conventional machine excavation, or a combination thereof will be used such that disturbance is minimal.

The proposed project are not anticipated to create additional indirect environmental impacts.

8.0 Public Participation

8.1 Public Hearing

8.1.1 Advertisement

On May 6, 2021, a Notice of Public Hearing for the DWSRF Project Plan for the lead service line replacement project appeared in the Jackson Citizen Patriot. The advertisement briefly describes the proposed project and estimated costs, mentions the availability of the report for viewing, and invites written comments from the public. Due to the ongoing COVID-19 pandemic, this Project Plan was made available on the City's website for public review and comment starting May 7, 2021. Written comments are requested to be received no later than 5:00 p.m. on June 8, 2021 to be a part of the public record.

The advertisement is included in Appendix 4. A publication affidavit will be included in the final Project Plan.

8.1.2 Transcript

Public comments received in writing will be read aloud at the City Council meeting held on June 8, 2021. An audio/video recording of the proceedings on a flash drive will be sent to EGLE project manager along with the final Project Plan.

8.1.3 Contents

A presentation of the project prepared by Fishbeck will be given to City Council on May 25, 2021, to familiarize Council and the public with project. The presentation will be streamed and available online to allow the public to view it within the public comment period. This presentation date was indicated in the advertisement.

The presentation will include the following information:

- A description of the DWSRF.
- A brief background on the City's water distribution system.
- A description of the project needs and problems to be addressed by the proposed project and the principal alternative that was considered.
- A description of the selected alternative, including capital costs.

- A description of project financing and costs to users, including the proposed method of project financing and the proposed annual charge to the typical residential customer.
- A description of the anticipated social and environmental impacts associated with the selected alternative and the measures that will be taken to mitigate adverse impacts.

The public hearing for the Project Plan will be incorporated into the regularly scheduled City Council meeting scheduled virtually for June 8, 2021, at 6:30 p.m. The City policy/procedure for virtual hearings requires that all public comments be submitted prior to hearing and will be read aloud during the hearing. Hearings are closed to public attendance.

8.1.4 Comments Received and Answered

Any comments received from the public will be addressed in the final Project Plan.

8.2 Adoption of the Project Plan

A resolution to formally adopt the Project Plan and implement the selected alternative will be introduced at the City Council regular session on June 8, 2021. The resolution will be included in the final DWSRF Project Plan.

Figures

PLOT INFO: Z:\130790 Jackson\MapDoc\DWSRF\DWSRF Water Service Area.mxd Date: 3/22/2021 2:16:17 PM User: mclazar

Rives Township

Blackman Township

City of Jackson

Summit Township

WATER SERVICE AREA

NORTH

0 2,000 4,000 FEET

LEGEND

Service Area

- City of Jackson
- Blackman Township

DATA SOURCES: CITY OF JACKSON GIS.

FIGURE NO. 1

PROJECT NO. 210410

City of JACKSON Michigan

City of Jackson

Jackson County, Michigan

Drinking Water State Revolving Fund (DWSRF) Project Plan

Hard copy is intended to be 11"x17" when plotted. Scale(s) indicated and graphic quality may not be accurate for any other size.

fishbeck

Engineers | Architects | Scientists | Constructors

PLOT INFO: Z:\130790 Jackson\MapDoc\DWSRF\DWSRF Water Distribution System.mxd Date: 4/27/2021 9:51:35 AM User: cdashbay

WATER DISTRIBUTION SYSTEM

Rives Township

Blackman Township

City of Jackson

Summit Township

BLACKMAN TOWNSHIP TANK

BLACKMAN TOWNSHIP BOOSTER STATION

WEST TANK

EAST TANK

KIBBY RD BOOSTER STATION

BRIGHTON ST BOOSTER STATION

ELLA SHARP PARK GOLF COURSE PUMP HOUSE

WATER TREATMENT PLANT

Blackman Township District

Essex Heights District

Main Pressure District

Portage River

Grand River

LEGEND

- Well
- Elevated Tank
- Pump Station
- Transmission Main
- Distribution Main

Pressure Districts

- Blackman Township District
- Essex Heights District
- Main Pressure District

NORTH

0 2,000 4,000 FEET

DATA SOURCES: CITY OF JACKSON GIS.

FIGURE NO. 2

PROJECT NO. 210410

City of JACKSON Michigan

City of Jackson
Jackson County, Michigan

Drinking Water State Revolving Fund (DWSRF) Project Plan

Hard copy is intended to be 11"x17" when plotted. Scale(s) indicated and graphic quality may not be accurate for any other size.

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PLOT INFO: Z:\130790 Jackson\MapDoc\DWSRF\DWSRF Lead Service Line Replacement.mxd Date: 4/22/2021 5:32:47 PM User: mclazar

Blackman Township

City of Jackson

Summit Township

Grand River

LEAD SERVICE LINE REPLACEMENT

NORTH

0 1,000 2,000 FEET

LEGEND

City Owned Material, Private Owned Material

Copper, Lead

DATA SOURCES: CITY OF JACKSON GIS.

FIGURE NO. 3

PROJECT NO. 210410

City of JACKSON Michigan

City of Jackson

Jackson County, Michigan

Drinking Water State Revolving Fund (DWSRF) Project Plan

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Maps

PLOT INFO: Z:\130790 Jackson\MapDoc\DWSRF\DWSRF Existing Land Use.mxd Date: 3/22/2021 2:46:02 PM User: mclazar

Blackman Township

City of Jackson

Grand River

Grand River

LEGEND

- RESIDENTIAL
- COMMERCIAL
- INDUSTRIAL
- CEMETERIES; PARKS
- CHURCHES; SCHOOLS; HOSPITALS/MEDICAL BUILDINGS
- COUNTY OWNED; EXEMPT - GENERIC; FEDERALLY OWNED - GOVERNMENT; INACTIVE; STATE OF MICHIGAN OWNED; TWP/CITY/VILLAGE OWNED; REFERENCE
- MICHIGAN DEPT OF TRANSPORTATION; OPERATING RAILROADS

EXISTING LAND USE

NORTH

0 1,000 2,000 FEET

DATA SOURCES: JACKSON COUNTY GIS PARCEL DATA.

Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community

MAP 1

PROJECT NO. 210410

City of JACKSON Michigan

City of Jackson

Jackson County, Michigan

Drinking Water State Revolving Fund (DWSRF) Project Plan

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PLOT INFO: Z:\130790 Jackson\MapDoc\DWSRF\DWSRF Planned Land Use.mxd Date: 3/22/2021 2:47:35 PM User: mclazar

Blackman Township

City of Jackson

Grand River

Grand River

LEGEND

Zoning Classification

- R-1 One Family Residential
- R-2 One and Two Family Residential
- R-3 Multiple Family Residential
- R-4 High Density Apartment and
- R-5 Mobile Home Park
- R-6 Residential and Low Density Office
- C-1 Neighborhood Commercial
- C-2 Community Commercial
- C-3 Central Commercial
- C-4 General Commercial
- PB Planned Building Group Shopping Center
- I-1 Light Industrial
- I-2 General Industrial
- PUDD Planned Unit Development District

NORTH

PLANNED LAND USE

0 1,000 2,000 FEET

DATA SOURCES: JACKSON COUNTY ZONING MAP. tMap contributors, and the GIS user community

MAP 2

PROJECT NO. 210410

City of JACKSON Michigan

City of Jackson

Jackson County, Michigan

Drinking Water State Revolving Fund (DWSRF) Project Plan

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PLOT INFO: Z:\130790 Jackson\MapDoc\DWSRF\DWSRF Population Density.mxd Date: 4/20/2021 3:33:13 PM User: mclazar

Blackman Township

City of Jackson

Summit Township

Grand River

Grand River

LEGEND

- 0 - 1,000 people per sq mi
- 1,000 - 8,400 people per sq mi
- 8,400 - 15,800 people per sq mi
- 15,800 - 24,000 people per sq mi
- 24,000 - 629,000 people per sq mi

DATA SOURCES: US CENSUS BUREAU.

POPULATION DENSITY
(US CENSUS 2019 BLOCK GROUP)

NORTH

0 1,000 2,000 FEET

MAP 3

PROJECT NO. 210410

City of JACKSON Michigan

City of Jackson
Jackson County, Michigan

Drinking Water State Revolving Fund (DWSRF) Project Plan

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PLOT INFO: Z:\130790 Jackson\MapDoc\DWSRF\DWSRF Environmental Contamination.mxd Date: 3/22/2021 2:53:43 PM User: mclazar

Blackman Township

City of Jackson

Summit Township

Grand River

ENVIRONMENTAL CONTAMINATION

NORTH

0 1,000 2,000 FEET

LEGEND

- PFAS - 70 ppt PFOS + PFOA
- Part 213 - Open Leaking Underground Storage Tank
- Part 213 - Closed Leaking Underground Storage Tank
- Part 201 - Environmental Contamination Site

DATA SOURCES: MICHIGAN EGLE ENVIRONMENTAL MAPPER AND PFAS ACTION RESPONSE TEAM (MPART)

MAP 4

PROJECT NO. 210410

City of JACKSON Michigan

City of Jackson

Jackson County, Michigan

Drinking Water State Revolving Fund (DWSRF) Project Plan

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PLOT INFO: Z:\130790 Jackson\MapDoc\DWSRF\DWSRF Major Surface Waters.mxd Date: 3/22/2021 2:23:00 PM User: mclazar

Blackman Township

City of Jackson

Summit Township

Grand River

Grand River

MAJOR SURFACE WATERS

NORTH

0 1,000 2,000 FEET

LEGEND

Rivers and Streams

DATA SOURCES: MICHIGAN GEOGRAPHIC FRAMEWORK.

MAP 5

PROJECT NO. 210410

City of JACKSON Michigan

City of Jackson

Jackson County, Michigan

Drinking Water State Revolving Fund (DWSRF) Project Plan

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PLOT INFO: Z:\130790 Jackson\MapDoc\DWSRF\DWSRF Wetlands.mxd Date: 3/22/2021 2:24:48 PM User: mclazar

Blackman Township

City of Jackson

Summit Township

Grand River

Grand River

LEGEND

- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Riverine

DATA SOURCES: US FISH & WILDLIFE NATIONAL WETLANDS INVENTORY.

NORTH

WETLANDS

0 1,000 2,000 FEET

MAP 6

PROJECT NO. 210410

City of JACKSON Michigan

City of Jackson

Jackson County, Michigan

Drinking Water State Revolving Fund (DWSRF) Project Plan

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PLOT INFO: Z:\130790 Jackson\MapDoc\DWSRF\DWSRF Soils.mxd Date: 3/22/2021 2:50:11 PM User: mclazar

Blackman Township

City of Jackson

Grand River

Grand River

LEGEND

USA Soils Hydrologic Group

- Group A - High Infiltration
- Group B - Medium Infiltration
- Group C - Low Infiltration
- Group D - Very Low Infiltration
- Group A/D- (Drained/Natural Condition)
- Group B/D- (Drained/Natural Condition)
- Group C/D- (Drained/Natural Condition)

NORTH

SOILS

0 1,000 2,000 FEET

DATA SOURCES: US NRCS SOIL SURVEY. ...) contributors, CC-BY-SA, Source: USDA NRCS, Esri

MAP 7

PROJECT NO. 210410

City of JACKSON Michigan

City of Jackson

Jackson County, Michigan

Drinking Water State Revolving Fund (DWSRF) Project Plan

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PLOT INFO: Z:\130790 Jackson\MapDoc\DWSRF\DWSRF FEMA Flood Hazard Zones.mxd Date: 4/20/2021 3:49:54 PM User: mclazar

Blackman Township

City of Jackson

PANEL 26075C0193D eff. 5/3/2010

PANEL 26075C0194D eff. 5/3/2010

PANEL 26075C0215D eff. 5/3/2010

PANEL 26075C0306D eff. 5/3/2010

PANEL 26075C0307D eff. 5/3/2010

PANEL 26075C0326D eff. 5/3/2010

PANEL 26075C0308D eff. 5/3/2010

Grand River

Grand River

LEGEND

- 1% Annual Chance Flood Hazard
- Regulatory Floodway
- Special Floodway
- Area of Undetermined Flood Hazard
- 0.2% Annual Chance Flood Hazard
- Future Conditions 1% Annual Chance Flood Hazard
- Area with Reduced Risk Due to Levee

DATA SOURCES: FEMA NATIONAL FLOOD HAZARD LAYER.

NORTH

FEMA FLOOD HAZARD ZONES

0 1,000 2,000 FEET

MAP 8

PROJECT NO. 210410

City of JACKSON Michigan

City of Jackson

Jackson County, Michigan

Drinking Water State Revolving Fund (DWSRF) Project Plan

Hard copy is intended to be 11"x17" when plotted. Scale(s) indicated and graphic quality may not be accurate for any other size.

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PLOT INFO: Z:\130790 Jackson\MapDoc\DWSRF\DWSRF Natural Features Inventory.mxd Date: 3/22/2021 2:42:42 PM User: mclazar

Blackman Township

City of Jackson

Summit Township

Grand River

Grand River

NATURAL FEATURES INVENTORY

NORTH

0 1,000 2,000 FEET

LEGEND

Probability of Threatened, Endangered or Special Concern Species

- High Probability
- Moderate Probability
- Low Probability

DATA SOURCES: MSU EXTENSION MICHIGAN NATURAL FEATURES INVENTORY.

MAP 9

PROJECT NO. 210410

City of JACKSON Michigan

City of Jackson

Jackson County, Michigan

Drinking Water State Revolving Fund (DWSRF) Project Plan

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PLOT INFO: Z:\130790 Jackson\MapDoc\DWSRF\DWSRF Prime Farmland.mxd Date: 3/22/2021 2:40:22 PM User: mclazar

Blackman Township

City of Jackson

Summit Township

Grand River

Grand River

LEGEND

- Prime Farmland
- Farmland of Local Importance
- Farmland of Statewide Importance
- Farmland of Unique Importance
- Not Prime Farmland

DATA SOURCES: US NRCS SOIL SURVEY.

MAP 10

PROJECT NO. 210410

City of JACKSON Michigan

City of Jackson

Jackson County, Michigan

Drinking Water State Revolving Fund (DWSRF) Project Plan

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Appendix 1

Jackson Capital Improvements Plan
Jackson Water Asset Management Plan
WSSN: 3470

5-Year Horizontal Asset CIP Projects

Project Number	Location/ Description	Estimated Year of Completion	Existing Diameter	Replacement Diameter	Main Length (feet)	Main Unit Cost ($/foot)	Water Main Cost	BRE Score (1-25)
1	Replace 4" main along Greenwood Ave from Morrell Street to W Wilkins Street	2021	4	8	825	$250	$206,000	11.0
2	Replace existing 12" main and 10" main on Morrell St east of Belden Rd and Hupp Ave north of Morrell St.	2021	10	12	3,520	$280	$986,000	14.0
3	Replace existing 12" main on Water St north of Morrell St.	2021	12	12	2400	$280	$672,000	15.0
4	Replace 6" main on Adams Street from Lansing Avenue to Blackstone Street	2021	6	8	1,475	$250	$369,000	11.1
5	Replace 4" main on Arnold Street from Cooper Street to dead-end	2021	4	8	715	$250	$179,000	8.0
6	Replace existing 4" main on Hollywood Ct east of Cooper St.	2021	4	8	295	$250	$74,000	9.6
7	Replace the existing 4" main on Larson Ct. east of Cooper St.	2022	4	8	296	$250	$74,000	9.6
8	Replace 6" main on Bowen Street from Gettysburg Avenue to Elmwood Avenue	2022	6	8	1,335	$250	$334,000	12.6
9	Replace 6" main on Briarcliff Road from West Avenue to Audubon Avenue	2022	6	8	1,305	$250	$326,000	9.5
10	Replace 4" main on North Grinnell Street from Wildwood Avenue to Norfolk Street	2022	4	8	650	$250	$163,000	10.4
11	Replace 4" main on Johnson Street; replace 4" main on Wilson Street from Plymouth Street to dead-end	2022	4	8	1,880	$250	$470,000	12.0
12	Replace existing 6" main on E Monroe St from Cooper St to Whitney St.	2022	6	8	1,465	$250	$366,000	8.9
13	Replace 6" main on E Robinson Street from S Milwaukee Street to Merriman Street	2022	6	8	825	$250	$206,000	13.0
14	Replace 12" main on N West Avenue from new main to W North Street	2022	12	12	305	$280	$85,000	8.0

Jackson Capital Improvements Plan
Jackson Water Asset Management Plan
WSSN: 3470

5-Year Horizontal Asset CIP Projects

Project Number	Location/ Description	Estimated Year of Completion	Existing Diameter	Replacement Diameter	Main Length (feet)	Main Unit Cost ($/foot)	Water Main Cost	BRE Score (1-25)
15	Replace existing 6" main on Thompson St between Oakdale Ave and Morrell St.	2022	6	8	1,315	$250	$329,000	11.7
16	Replace 6" main on Jefferson Street from Lansing Avenue to Blackstone Street	2023	6	8	1,490	$250	$373,000	6.6
17	Replace 6" main on North Pleasant Street from E Ganson Street to E Michigan Avenue	2023	6	8	1,065	$250	$266,000	14.0
18	Replace 6" main on Austin Avenue from Cooper Street to Howard Street	2023	6	8	815	$250	$204,000	13.0
19	Replace 6" main on Bennett Street from W North Street to Clinton Street	2023	6	8	1,090	$250	$273,000	14.0
20	Replace 4" main on DeMay Court	2023	4	8	275	$210	$58,000	8.4
21	Replace 6" main on Marshall Street from Whitney Street to Cooper Street	2023	6	8	1,430	$250	$358,000	14.0
22	Replace 6" main on Backus from Clinton to Monroe St.	2023	6	8	1,422	$250	$356,000	12.0
23	Replace 8" main on Eggleston Street from Wall Street to E Robinson Street	2023	8	8	315	$210	$66,000	13.0
24	Replace existing 4" main along McBride St from 4th St to 1st St.	2023	4	8	1,156	$250	$289,000	13.0
25	Replace 6" main on Oakhill from West Ave to Steward Ave.	2024	6	8	1,850	$250	$463,000	10.2
26	Replace 4" main on Warwick Ct from Martin Luther King Jr. Blvd to Cooper St.	2024	4	8	888	$250	$222,000	12.0
27	Replace 6" main on Bush St from Hallett St to north end of road	2024	6	8	1,540	$250	$385,000	11.1
28	Replace 6" main along Chapin St from Summit Ave to Elm Avenue	2024	6	8	972	$250	$243,000	13.0
29	Replace 6" main along Deyo Street from Summit Avenue to Elm Avenue	2024	6	8	940	$250	$235,000	13.0
30	Replace 6" main on Joy Avenue from Summit Avenue to Elm Avenue	2024	6	8	965	$250	$241,000	13.0

Jackson Capital Improvements Plan
Jackson Water Asset Management Plan
WSSN: 3470

5-Year Horizontal Asset CIP Projects

Project Number	Location/ Description	Estimated Year of Completion	Existing Diameter	Replacement Diameter	Main Length (feet)	Main Unit Cost ($/foot)	Water Main Cost	BRE Score (1-25)
31	Replace existing 6" main on Whitney St from North St to Leroy St.	2024	6	8	892	$250	$223,000	13.0
32	Replace 4" main on Woodward Avenue	2024	4	8	383	$250	$96,000	12.0
33	Replace existing dead end 6" main on Carr St north of Wildwood Ave and loop east to Edward Ave 8" main	2025	6	8	1,595	$250	$399,000	8.5
34	Replace 8" main on Dewey from Clinton Rd to Lansing Ave.	2025	8	8	1,628	$250	$407,000	9.1
35	Replace 6" mains on Irving St north of Ganson St to Leroy Street	2025	4	8	610	$250	$153,000	14.0
36	Replace 6" mains on Leroy St from Irving St east to Whitney St.	2025	6	8	356	$250	$89,000	8.4
37	Replace 6" main on Beverly Park Pl on West Ave to Griswold Street	2025	6	8	910	$250	$228,000	9.9
38	Replace 12" main on Blackstone St from Lansing Ave to Louis Glick Hwy.	2025	12	12	1,110	$300	$333,000	16.0
39	Replace 12" main on Blackstone St from Washington Ave to Morrell St.	2025	12	12	1,995	$300	$599,000	14.0
40	Replace 6" main on Carlton Blvd from West Ave to Brown St.	2025	6	8	2,610	$250	$653,000	9.6
5-Year Horizontal Asset Improvements Cost							**$12,051,000**	

Jackson Capital Improvements Plan
Jackson Water Asset Management Plan
WSSN: 3470

20-Year Horizontal Asset CIP Projects

Project Number	Location/ Description	Estimated Year of Completion	Existing Diameter	Replacement Diameter	Main Length (feet)	Main Unit Cost ($/foot)	Water Main Cost	BRE Score (1-25)
41	Replace 12" main on N Wisner Street from W Argyle Street to Boardman Road	2026	12	12	3,725	$300	$1,118,000	8.1
42	Replace 4" main on Martin Luther King Jr. Drive from Morrell Street to E Mason Street	2026	4	6	1,075	$240	$258,000	12.0
43	Replace 6" main on Franklin from Brown St to West Ave.	2026	6	8	2,675	$250	$669,000	12.0
44	Replace 8" main along High St from Executive Drive to South St.	2026	8	8	3,254	$250	$814,000	7.5
45	Replace 6" main along Lansing Ave from Blackstone St to North St.	2027	6	8	2,690	$260	$699,000	9.0
46	Replace 8" main on Morrell St from Greenwood Ave to Martin Luther King Jr. Blvd.	2027	8	8	1,905	$260	$495,000	13.0
47	Replace 6" main along Prospect St from 4th Street to Martin Luther King Jr. Drive	2027	6	8	3,920	$250	$980,000	13.0
48	Replace 6" main along Prospect Street from Martin Luther King Jr. Drive to Townly St	2028	6	8	3,590	$250	$898,000	11.2
49	Replace the 24" south transmission main from the WTP to Martin Luther King Jr. Dr.	2028	24	24	4,546	$460	$2,091,000	16.2
50	Replace 8" main on Steward Ave from Wildwood Ave to Demay Court	2029	8	8	1,230	$260	$320,000	12.0
51	Replace 6" main along Washington Ave from Brown St to West Avenue	2029	6	8	2,675	$260	$696,000	12.0
52	Replace main along Washington from East Avenue to Elm Ave	2029	8	8	2,505	$250	$626,000	16.0
53	Replace main along Washington from Grand River to East Avenue	2029	8	8	1,884	$250	$471,000	14.8
54	Replace 12" main on Wisner St from Michigan Ave to Morrell Ave.	2030	12	12	2,625	$300	$788,000	14.4
55	Replace 24" main on Cooper Street & Belden Road from the Water Treatment Plant to Mitchell Street	2030	24	24	4,850	$480	$2,328,000	18.0
56	Replace 4" main on Virginia St from Waterloo Ave to Ellery Ave.	2030	4	8	407	$250	$102,000	10.0

Jackson Capital Improvements Plan
Jackson Water Asset Management Plan
WSSN: 3470

20-Year Horizontal Asset CIP Projects

Project Number	Location/ Description	Estimated Year of Completion	Existing Diameter	Replacement Diameter	Main Length (feet)	Main Unit Cost ($/foot)	Water Main Cost	BRE Score (1-25)
57	Replace 6" dead end main on Horton St north of Leroy St.	2030	6	8	877	$250	$219,000	12.0
58	Replace existing 6" mains along Wall Street and E Robinson Street between Merriman Street and Eggeleston Street	2030	6	8	1,545	$250	$386,000	13.0
59	Replace 4" main along Pleasant St between Chapin St and Pringle Ave	2031	4-6	8	981	$260	$255,000	12.5
60	Loop existing 6" dead end mains on Adams St east of Blackstone St and on Myrtle St north of North St through Lions Park.	2031	6	8	1,775	$210	$373,000	12.0
61	Replace existing 6" main on Joy Ave, Elm Ave, Page Ave, and Summit Ave south of Pringle Ave.	2031	6	8	2,426	$250	$607,000	12.0
62	Replace 4" main on Wilkins street from Martin Luther King Jr. Drive and north up to Franklin Street	2031	4	8	1,591	$260	$414,000	11.0
63	Replace existing 6" main along Christy Ave from West Ave to 6th St; also West Ave to Morrell St and 7th St to Carlton Blvd.	2031	6	8	1,416	$250	$354,000	12.0
64	Replace 8" main on Oakdale Avenue from Wisner St to Webster St	2032	6	8	2,512	$250	$628,000	7.0
65	Replace 6" main on South St from Milwaukee St to Merriman St.	2032	6	8	811	$250	$203,000	10.0
66	Replace existing 4" main on Ingham St from Van Buren St to Calhoun St.	2032	4	8	364	$250	$91,000	11.0
67	Replace existing mains along Van Buren St between Blackstone St and Jackson St.	2032	4-6	8	915	$260	$238,000	10.0
68	Replace existing mains along Clinton St between Blackstone St and Jackson St.	2032	8	8	768	$260	$200,000	11.0
69	Replace 6" main on Morrell St east of Milwaukee St.	2032	6	8	2,155	$250	$539,000	12.0
70	Replace existing 4" mains along Burr St from Martin Luther King Jr. Drive east to State St.	2032	4	8	1,947	$250	$487,000	11.5

Jackson Capital Improvements Plan
Jackson Water Asset Management Plan
WSSN: 3470

20-Year Horizontal Asset CIP Projects

Project Number	Location/ Description	Estimated Year of Completion	Existing Diameter	Replacement Diameter	Main Length (feet)	Main Unit Cost ($/foot)	Water Main Cost	BRE Score (1-25)
71	Replace existing 4" mains along Park Ave from Burr St north to Ganson St.	2033	4	8	1,000	$250	$250,000	12.5
72	Replace existing 4" main along Perrine St from Pearl St north to Burr St.	2033	4	8	986	$250	$247,000	13.5
73	Replace 6" main along Pearl St west of Martin Luther King Jr. Drive.	2033	6	8	392	$250	$98,000	10.8
74	Replace 6" main along Washington Ave from West Avenue to 2nd St.	2033	6	8	1,301	$260	$338,000	10.8
75	Replace 12" main on Wisner Street between North St and W Michigan Avenue	2033	12	12	5,116	$300	$1,535,000	13.6
76	Replace 6" main on Grovedale Ave between Glen Dr and Broadcrest Rd.	2033	6	8	545	$250	$136,000	13.0
77	Replace 6" main on Cooper St from Ganson St to Michigan Ave.	2034	6	8	2,575	$260	$670,000	12.0
78	Replace 6" main on Quarry St from Park Ave to N Martin Luther King Jr. Drive	2034	6	8	1,016	$260	$264,000	13.0
79	Replace 6" main along Michigan Ave from Pleasant St to Dwight St	2034	6	8	1,052	$250	$263,000	13.0
80	Replace 6" main on Gorham St from Tyson St to Ganson St.	2034	6	8	1,310	$250	$328,000	14.0
81	Replace 6" main along Gorham St from Page Ave to Pringle Ave.	2034	6	8	1,712	$250	$428,000	12.0
82	Replace 6" water main along Laurel Lane and Barberry Dr north of High St to Merriman St.	2035	6	8	2,176	$250	$544,000	7.5
83	Replace 6" water main along Merriman St north of High St to Barberry Dr.	2035	6	8	535	$250	$134,000	8.5
84	Replace 6" water main along Heather Ln north of High St to Barberry Dr.	2035	6	8	771	$250	$193,000	9.5
85	Replace 6" mains north of High Street between Greenwood Ave and Linwood Ave.	2035	6	8	4,024	$250	$1,006,000	13.0
86	Replace 6" mains on Jackson St north of Wesley St. and east down Michigan Avenue to Mechanic St.	2035	6	8	1,779	$250	$445,000	11.0

Jackson Capital Improvements Plan
Jackson Water Asset Management Plan
WSSN: 3470

20-Year Horizontal Asset CIP Projects

Project Number	Location/ Description	Estimated Year of Completion	Existing Diameter	Replacement Diameter	Main Length (feet)	Main Unit Cost ($/foot)	Water Main Cost	BRE Score (1-25)
87	Various Essex Heights Improvements	2036	6	8	7,354	$250	$1,839,000	9.0
88	Replace existing 6" main on 1st St from Park Pl to Sulgrave Ave; replace 6" water main on Heyser St and Sulgrave Ave between 4th St and 1st St.	2036	6	8	3,114	$250	$779,000	8.0
89	Replace 6" main along Chapin St from S Pleasant Street to Horton St.	2037	6	8	1,685	$250	$421,000	13.0
90	Replace 6" main along Gettysburg Ave from Webster St to West Ave.	2037	6	8	1,442	$250	$361,000	12.0
91	Replace existing 6" along Randolf St from Woodbridge St to Chittock Ave.	2037	6	8	2,417	$250	$604,000	13.0
92	Replace existing 6" along Jackson St from Euclid Ave to Randolph St.	2037	6	8	998	$250	$250,000	14.0
93	Replace existing 6" along Williams St from Douglas St to High St.	2037	6	8	675	$250	$169,000	15.0
94	Replace existing 6" along Douglas St from Jackson St to Maple Ave.	2037	6	8	458	$250	$115,000	16.0
95	Replace 6" main along Prospect St, Addison St, South St between Jackson St and Milwaukee St.	2038	6	8	7,964	$250	$1,991,000	11.0
96	Replace existing 12" main on Blackstone St from Ganson St to North St.	2038	12	12	1,552	$280	$435,000	14.0
97	Replace 6" mains on Adams St from Clinton Road to Lansing Avenue	2038	6	8	780	$250	$195,000	12.0
98	Replace 6" mains on Carroll Ave north of Ganson St	2039	6	8	3,577	$260	$930,000	14.0
99	Replace 12" main on Monroe from Blackstone St to Walker St.	2039	12	12	1,841	$300	$552,000	11.4
100	All existing 4" water main in system replaced	2040	4	8	30,566	$250	$7,642,000	-
20-Year Horizontal Asset ImprovementsCost							**$41,509,000**	

Jackson Capital Improvements Plan
Jackson Water Asset Management Plan
WSSN: 3470

5-Year LSL Replacement

Project Description	Estimated Year of Completion	Project Cost	Cumulative Percentage of Total LSLs
Annual Lead Service Replacement Allowance	2023	$1,979,673	2.85%
Annual Lead Service Replacement Allowance	2024	$1,979,673	5.70%
Annual Lead Service Replacement Allowance	2025	$1,979,673	8.55%
Total 5-Year LSL Replacement Cost		$5,939,019	

20-Year LSL Replacement

Project Description	Estimated Year of Completion	Project Cost	Cumulative Percentage of Total LSLs
Annual Lead Service Replacement Allowance	2026	$1,979,673	11.40%
Annual Lead Service Replacement Allowance	2027	$1,979,673	14.25%
Annual Lead Service Replacement Allowance	2028	$1,979,673	17.55%
Annual Lead Service Replacement Allowance	2029	$1,979,673	20.85%
Annual Lead Service Replacement Allowance	2030	$1,979,673	24.15%
Annual Lead Service Replacement Allowance	2031	$1,979,673	27.45%
Annual Lead Service Replacement Allowance	2032	$1,979,673	30.75%
Annual Lead Service Replacement Allowance	2033	$1,979,673	34.05%
Annual Lead Service Replacement Allowance	2034	$1,979,673	37.35%
Annual Lead Service Replacement Allowance	2035	$1,979,673	40.65%
Annual Lead Service Replacement Allowance	2036	$1,979,673	43.95%
Annual Lead Service Replacement Allowance	2037	$1,979,673	47.25%
Annual Lead Service Replacement Allowance	2038	$1,979,673	50.55%
Annual Lead Service Replacement Allowance	2039	$1,979,673	53.85%
Annual Lead Service Replacement Allowance	2040	$1,979,673	57.15%
Total 20-Year LSL Replacement Cost		$29,695,095	

Jackson Capital Improvements Plan
Jackson Water Asset Management Plan
WSSN: 3470

5-Year Vertical Asset CIP Projects

Project Number	Project Title	Estimated Fiscal Year of Completion	Project Cost	BRE Score (1-25)	Short Description
1	WTP Filter Pipe Gallery Rehabilitation	2020/2021	$1,165,000	15.9	Rehabilitation of the Piping and Valving in the Filter Pipe Gallery. Note: cost shown for significant pipe and valve replacement. The condition of the existing pipes and valves are unknown at this time.
2	WTP Electrical Improvements	2020/2021	$262,000	14.9	Replacement of MCCs 1 & 2 and other electrical wrok
3	SCADA System Software	2020/2021	$110,000	14.9	New Wonderware Software and integration
4	WTP Clarifier Rehabilitation	2021/2022	$1,250,000	15.8	Recoating of Clarifiers
5	Build a new shop building near High Service Pump Station	2022/2023	$150,000	12.2	Build a new workshop for plant staff near High Service Pump Station
6	Replace Sludge and Caustic Soda Recirculation and Waste Pumps	2022/2023	$200,000	9.4	Replace existing Primary and Secondary Sludge pumps and Caustic Soda Recirculation Pumps
7	Clean out 3 MG Below-ground Storage Tank	2023/2024	$1,000,000	10.0	Clean out 3 MG Below-ground Wash Water Storage tank. Will need to bypass pump around the storage tank while it is cleaned.
8	Ground Storage Tank Isolation Valve Replacement	2024/2025	$100,000		Replace existing isolation valves.
		5-Year Vertical Asset Improvements	$4,237,000		

Jackson Capital Improvements Plan
Jackson Water Asset Management Plan
WSSN: 3470

20-Year Vertical Asset CIP Projects

Project Number	Project Title	Estimated Fiscal Year of Completion	Project Cost	BRE Score (1-25)	Short Description
9	Rehabilitate Well No. 11	2025/2026	$150,000	12.2	Repair Well No. 11 Pump and Motor
10	Refurbish Wellhouse No. 1 Structure	2026/2027	$300,000	9.0	Significantly refurbish or rebuild existing Wellhouse No. 1 Structure
11	Refurbish Wellhouse No. 3 Structure	2027/2028	$150,000	9.0	Significantly refurbish or rebuild existing Wellhouse No. 3 Structure
12	Repave Water Treatment Plant Driveway	2028/2029	$214,000	9.0	Repave Water Treatment Plant Site
13	Replace Ferric Chloride Bulk Tank	2029/2030	$101,000	10.5	Replace existing Ferric Chloride Bulk Storage Tank with new
14	Refurbish Wellhouse No. 6 Structure	2030/2031	$150,000	9.0	Significantly refurbish or rebuild existing Wellhouse No. 6 Structure
15	Drill new wells to replace wells at end of service life (2 wells)	2030/2031	$2,490,000	15.0	Drill new wells, purchase land, build new wellhouses (NOTE: no cost for raw water pipeline as location is unknown, assumed more wells could be developed in Ella Sharp area)
16	Refurbish Wellhouse No. 6 Structure	2032/2033	$150,000	9.0	Significantly refurbish or rebuild existing Wellhouse No. 7 Structure
17	Refinish Laboratory Counters	2033/2034	$88,000	8.0	Refinish Existing Laboratory Counters and Cabinets.
18	On-site Cl_2 Generation	2034/2035	$850,000	14.0	Installation of an on-site Cl_2 Generation system
19	Recoat Elevated Tanks	2035/2036	$500,000	12.0	Recoat Elevated tanks
20	Recoat and rehabilitate Caustic Soda Storage Tanks	2036/2037	$212,000	14.0	Remove detritus from inside tank. Rehabilitate concrete inside of tank. Recoat Tanks with Chemical Resistant Coating.
21	Drill new wells to replace wells at end of service life (2 wells)	2037/2038	$2,490,000	15.0	Drill new wells, purchase land, build new wellhouses (NOTE: no cost for raw water pipeline as location is unknown)
22	Replace WTP Roof	2038/2039	$505,000	9.0	Replace WTP Roof
23	Filter Media Replacement	2039/2040	$800,000	12.0	Replace Filter Media
20-Year Vertical Asset Improvements			$9,150,000		

Appendix 2

toward trail use, Jackson can seek a multiplier effect throughout its recreation and even overall economic systems.

Careful management and maximized benefit are already the cornerstones of the community's recreation planning. Understanding that users largely make their recreation choices on a regional scale, the collaboration between the City and the County should be a fundamental strategy to pool resources and decrease service duplication. The 2015 plan acknowledges the success of this strategy by seeking to replicate it: the first goal is to "develop lines of communication, collaboration, and cooperation with other local communities and recreation providers." The plan also prioritizes renovations to existing parks and recreation facilities over the acquisition of new ones, citing support from the 2013 Citizen Opinion Survey and economic conditions, but continues to provide for the possibility of new park development for underserved areas, natural resources protection, and in the case of unique opportunities.

Historic Resources

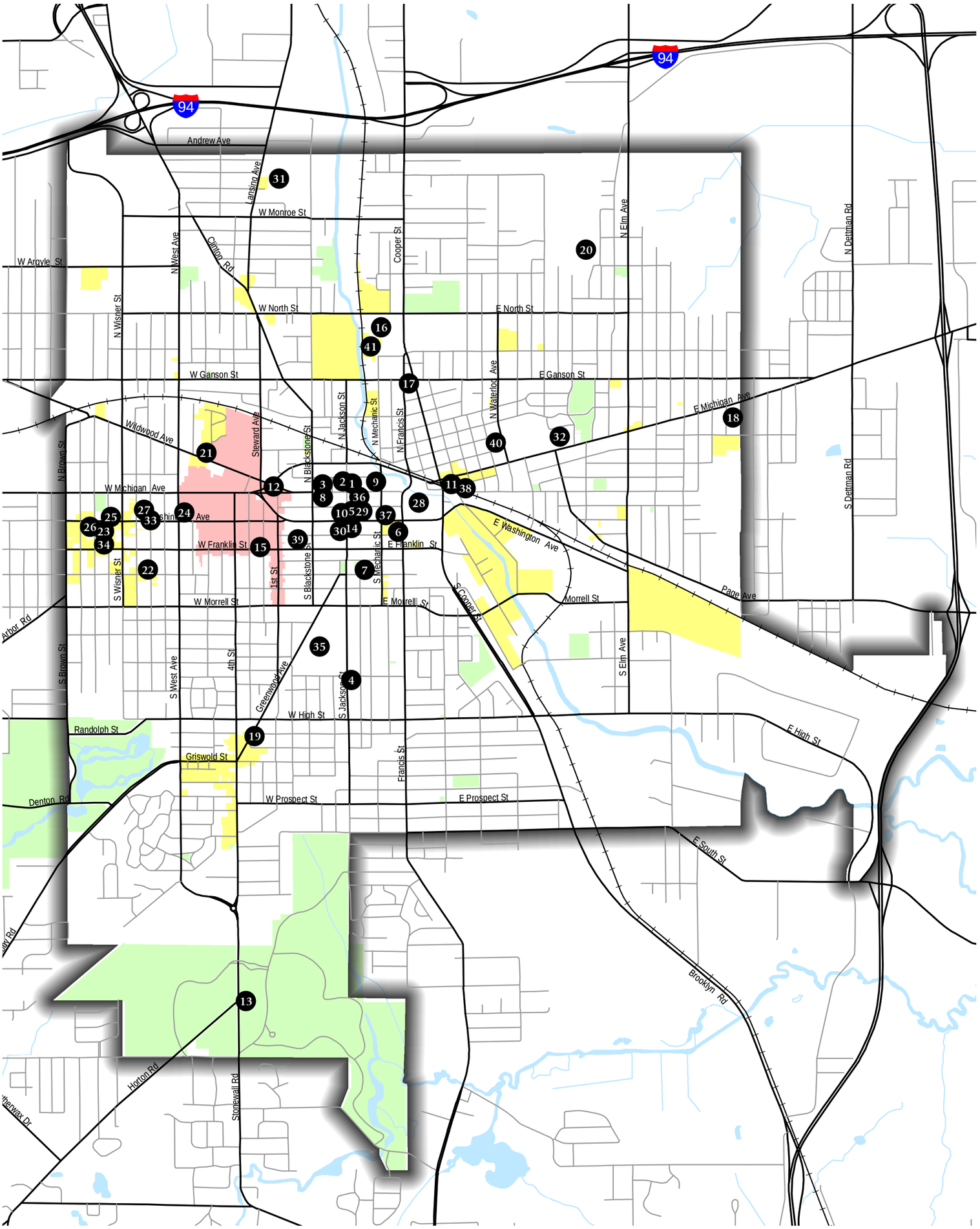
An impressive amount of asset construction has taken place in the City over the last 185 years, and some of it is still around to enjoy. The City created the Under the Oaks Historic District in 1977 to celebrate the "Birthplace of the Republican Party." On this site, originally on the outskirts of town and now commemorated at the corner of Franklin and Second Streets, a state convention was held in 1854 to found a new anti-slavery political party. Approximately 300 notable homes surrounding the marker, built in the late 1800s, make up the historic district.

Forty-two (42) other sites are designated as one-building, stand-alone local historic districts. Six of these sites are listed on the National Register of Historic Places, as are five sites that are not also accompanied by a local historic district. These two designations have similarities and distinctions. Both are evaluated according to the same criteria; in fact, Michigan's Local Historic Districts Act (PA 169 of 1970) specifically cites the Secretary of the Interior's standards for inclusion in the National Register as the required basis for evaluating the age, integrity, and significance of local historic

"Map My Run" data aggregation

Dr. Martin Luther King Jr. Trail

Bucky Harris Park



CITY OF JACKSON

Historic Resources

0 0.25 0.5 1 Miles

Data Sources: State of Michigan Geographic Data Library, City of Jackson GIS, Community Engagement Sessions

- City of Jackson
- Park
- Major Road
- Minor Road
- Railroad
- # Historic Building or Location
- Concentration of Historic Resources
- Under the Oaks Historic Distric

Beckett&Raeder

HISTORIC DESIGNATIONS

Point	Name
1	Stone Post Office
2	First Congregational Church
3	Jackson District Library
4	No. 5 Fire House
5	First Baptist Church
6	St. Mary's Catholic Church
7	Berthold S. Rummler House
8	First United Methodist Church
9	Michigan Theatre
10	Beffel Lighting
11	Michigan Central Depot
12	Soldiers & Sailors Monument
13	Ella Sharp Museum House
14	St. Pauls Church
15	Republican Party Birthplace
16	Old Prison
17	St. John's Catholic Church
18	Commercial Exchange Building
19	1401 Greenwood Ave.
20	Co. Juvenile Court Building
21	604 Wildwood Ave.
22	1000-02 Carlton Blvd.
23	310 S Thompson St
24	205 S West Ave
25	1214 West Washington Ave
26	1403 W Washington Ave
27	206 S Webster St
28	Post Office
29	Masonic Temple
30	County Courthouse
31	County Health Department
32	Former E. Intermediate School
33	1000 W Washington Ave
34	1300 W Franklin St
35	Mt. Evergreen Cemetery
36	Reynolds Building
37	227 S Mechanic St
38	Michigan Central Building
39	317 W. Wesley St
40	Allen School
41	Withington & Cooley

resources when considering district designation. Sites listed on the National Register are eligible for state and federal investment grants and tax credits (when such programs are available), and assistance from the Advisory Council on Historic Preservation any time a federal project may affect the historic property. However, the listing does not provide any specific restrictions on modification to the property, including preservation or protection from demolition. In other words, it has no regulatory teeth.

Local historic districts are designed to preserve the exterior appearance of a building or geographic area; because they are created by ordinance, they are enforceable as law just like zoning. Jackson's historic preservation ordinance (Code of Ordinances, Sec 13-1) requires an in-depth study of the integrity and historical significance of the building or area before a district can be designated, as well as the consent of the majority of property owners within the district at the time of creation. Once created, the ordinance requires that all property owners in the district present proposed exterior modifications to the Historic District Commission, which will issue a Certificate of Compliance if the modification meets the United States Secretary of the Interior's Standards for Rehabilitation, a Notice to Proceed if the modification does not meet the standards but is permissible for some other reason (e.g., public safety or an act of God), or a denial.

There are quantifiable economic benefits to the implementation of a historic district.[37] Most directly, improvements to designated properties are eligible for a 20% federal tax credit, making a substantial contribution to the project's feasibility and return on investment. (The 2011 Michigan Business Tax reorganization eliminated a 5% state tax credit for commercial rehabilitation and a 25% credit for residential rehabilitation; some grants and loans are now available for commercial historic properties through the Michigan Community Revitalization Program.) Preservation projects derive about 70% of their costs from labor and 30% from materials, as opposed to a 50-50 split in new construction projects. Since labor is generally local while materials are frequently shipped, this shift retains a greater portion of the investment in the community.

Numerous studies have found that home values rise more quickly in historic district neighborhoods than in similar non-designated neighborhoods, including a 2002 study of five Michigan communities. This, in turn, has an attendant increase in tax revenues for the City.[38]

However, historic districts implement their own unique set of challenges, and they are not a one-size-fits-all solution. Though the integrity of the structures within the district is examined at the time of the district's designation, weather and wear and tear have the same effects within the district as outside of it, and the fundamental citywide mismatch between the number of housing structures and the number of households does not spare the district. The HDC has retained a graduate student in Eastern Michigan University's renowned Historic Preservation program to conduct a survey of the structures within the District in order to provide a current assessment of the integrity of the contributing and non-contributing structures.

Of course, plenty of historic value can and does occur outside of designated districts, and historic district designation is by no means the only way to protect it. To understand the extent of Jackson's built heritage resources, a reconnaissance-level survey was conducted in conjunction with the writing of this master plan. Historical maps of the City were reviewed and each street was driven or walked in order to to identify structures and concentrations of structures which could be potential historic resources. Historical significance and the integrity of architecture and building materials were assessed according to a uniform and widely accepted standard, the National Register of Historic Places eligibility criteria.[39] The purpose of using these criteria was solely to achieve such uniformity and acceptance, not to recommend the implementation of any historic districts or places.

The paradigm shift in planning from use-based land classifications to intensity-based classifications, as defined by the buildings, streets, and blocks, has some interesting emerging parallels with historic

Historic Jackson buildings

From top: The Rosenfeld building (700 Blackstone); Cascades Park; 218 Franklin

Credit: Eastern Michigan University Historic Preservation Department Student Surveyors

preservation.[40] The historic preservation movement and the movement toward built-form regulation rather than use regulation (called form-based coding) share some fundamental alliances: "they respect and take inspiration from America's past, seek to assist in the revitalization of older City centers, and hope to re-integrate walkability into American lifestyles." The fundamental premise of a form-based code is that new development should share enough physical similarity to its surroundings to be contextually appropriate. Much of the work in developing a form-based code, then, is in understanding, measuring, describing, and prescribing that physical context—much as a historic district study committee does. There exists a substantial opportunity to relate Jackson's future development to its past development in the process of writing a form-based code, codifying the kinds of distinctive elements and features that led participants at each community workshop to describe the City as "historic." In order to develop a form-based code, a close working relationship between the City's Neighborhood and Economic Operations Department and the Historic District Commission is essential. The HDC can contribute to contextual development by identifying and advocating for an adequate number of building form types and defining appropriate contextual form standards, adding a body of skill and knowledge that is necessary to construct a local and workable code.

Arts and Culture

The City of Jackson is home to a wealth and breadth of cultural assets. Citizens at the community workshops listed many of them, with the Ella Sharp Museum and Park, Armory / Art 634, and Carnegie District Library appearing most often. The list included both physical assets, such as the riverwalk and amphitheater on the Consumers Power campus and the Louise Nevelson "Summer Night Tree" sculpture, and events such as the Hot Air Jubilee. Several food establishments were cited, including Hinkley's Bakery (which had just won the designation "Best Donut in the State" by mlive.com at the time of the workshops), the Farmers

From top: Jackson City Hospital; Holda's building, East Michigan Avenue; Jackson Carnegie District Library

Credit: Eastern Michigan University Historic Preservation Department Student Surveyors; Wikimedia (Carnegie Library)

Market, and Loud & Jackson's Parlor. The National Citizen Survey conducted in Jackson County has found satisfaction with cultural, arts, and music activities increasing from a 34% positive rating in 2009 to 41% in 2013.[41] A survey conducted for the countywide 2006 Greater Jackson Community Cultural Plan found that residents most often stayed in the City or county for their arts and cultural programs as opposed to Ann Arbor, Detroit, or other locations, and they reported attending libraries/bookstores, film showings, and live music most frequently.[42]

However, visioning session attendees also frequently mentioned a lack of widespread knowledge of these assets and a need for better promotion, an assertion that was supported by the Cultural Plan survey. Respondents said that the most significant barrier to participating in arts, cultural, and heritage programs was "lack of information about events, dates, or times," with 38% of participants choosing that item over other reasons such as "hard to make time to get out" (11%), "prefer to spend leisure time in other ways" (8%), or parking (4%). When asked how they did get information about events, the greatest percentage found direct mail from the event organizer to be "very useful," and most other media sources—including radio, television, newspaper listings and ads, and email—to be "useful" (range: 36%-45%). The least-frequented source of information was the county tourism website, with 37% of respondents saying "I do not use this."

The last conclusion is unfortunate, because ExperienceJackson.com maintains one of the most complete event databases in the county. The Jackson 2020 Strategic Plan proposes to support its goal of "increase[ing] awareness, alignment, and access to events and institutions in the Jackson Community" by creating an inventory of festivals and special events, listing all events on the Experience Jackson community calendar, and expanding and promoting usage of the website throughout the community, suggesting that the community has made excellent progress. A well-branded, pervasive, consistent messaging campaign directed both within the community and throughout the surrounding area is recommended.

37. Jackson cultural assets

From top: Michigan Theater; Summer Night Tree sculpture, Louise Nevelson

A desire for a livelier "scene" in Jackson was recognized by community engagement workshop attendees. More often than any other, participants said they wished the word "vibrant" described the City. All six sessions cited a bustling and thriving downtown as a collective priority, and it topped the list in half. Michigan's place-based economic strategy echoes this, asserting that cultural amenities are among the essential characteristics of places which are attractive to the talented workers and entrepreneurs driving the new economy. Many organizations have come together to help measure and promote this assertion, including the Michigan Council for Arts and Cultural Affairs, ArtServe Michigan, the Michigan Economic Development Corporation, and the national Cultural Data Project. These organizations estimate that the state's nonprofit arts community spent over $564M in the state in 2011, with 34% of the funds paid directly to Michigan workers and another 2% to the state in payroll taxes.

However, it is important to remember that even under the place-based economic model, cultural assets are indirect rather than direct generators of wealth. According to the 2012 American Community Survey, the 2.5% of Jackson workers who listed occupations falling under the North American Industrial Classification System code "Art, Entertainment, Recreation" had a median income of $16,116—the fourth lowest classification of 19. Those workers with full-time, year-round jobs did better, earning a median income of $30,530, but just half of the workers fit that description. The 13% of Jackson workers in the tourism-related occupational categories of "Accommodation and Food Service" fared even worse: the total median income of $11,129 and full-time, year-round median income of $16,903 are both the lowest in the City, as is the ratio of full-time, year-round workers to all workers at 30%. These numbers would make it difficult to recommend the expansion of these sectors in Jackson's economy, but fortunately that need is not indicated by any of the data. The amenities exist, and strengthening them through promotion, linkage, and increased utilization is poised to pay a variety of dividends at the household, citywide, and regional scale.

From top: Art 635; Grand River Brewery; Jackson Cruise-In

Credits: Wikimedia; City of Jackson Downtown Development Authority; www.mlive.com

Appendix 3

Michigan Natural Features Inventory

MSU Extension

County Element Data

The lists include all elements (species and natural communities) for which locations have been recorded in MNFI's database for each county. Information from the database cannot provide a definitive statement on the presence, absence, or condition of the natural features in any given locality, since much of the state has not been specifically or thoroughly surveyed for their occurrence and the conditions at previously surveyed sites are constantly changing. The County Elements Lists should be used as a reference of which natural features currently or historically were recorded in the county and should be considered when developing land use plans. Included in the list is scientific name, common name, element type, federal status, and state status for each element.

Choose a county Jackson

Jackson County

Code Definitions

Scientific Name	Common Name	Federal Status	State Status	Global Rank	State Rank	Occurrences in County	Last Observed in County
Acris blanchardi	Blanchard's cricket frog		T	G5	S2S3	5	1957
Alasmidonta marginata	Elktoe		SC	G4	S3?	4	2012
Alasmidonta viridis	Slippershell		T	G4G5	S2S3	11	2017
Ammodramus henslowii	Henslow's sparrow		E	G4	S3	5	2016
Ammodramus savannarum	Grasshopper sparrow		SC	G5	S4	4	2016
Angelica venenosa	Hairy angelica		SC	G5	S3	3	1978
Asclepias hirtella	Tall green milkweed		T	G5	S2	2	1981
Asclepias purpurascens	Purple milkweed		T	G5?	S2	6	2006
Baptisia lactea	White or prairie false indigo		SC	G4Q	S3	5	2014
Besseya bullii	Kitten-tails		E	G3	S1	5	2010
Betula populifolia	Gray birch		SC	G5	S3	1	1999
Bombus affinis	Rusty-patched bumble bee	LE	SC	G2	SH	2	1959
Bombus auricomus	Black and gold bumble bee		SC	G5	S2	4	2020
Bombus borealis	Northern amber bumble bee		SC	G4G5	S3	1	1955
Bombus pensylvanicus	American bumble bee		SC	G3G4	S1	3	1980
Bombus terricola	Yellow banded bumble bee		SC	G3G4	S2S3	1	1924
Botaurus lentiginosus	American bittern		SC	G5	S3	5	1996
Bouteloua curtipendula	Side-oats grama grass		E	G5	S1	1	2008
Brickellia eupatorioides	False boneset		SC	G5	S2	1	1966
Calephelis mutica	Swamp metalmark		SC	G3	S1	3	2008
Carex amphibola	Narrow-leaved Sedge		SC	G5	SNR	1	2008

Scientific Name	Common Name	Federal Status	State Status	Global Rank	State Rank	Occurrences in County	Last Observed in County
Carex typhina	Cattail sedge		T	G5	S1	1	2013
Chlidonias niger	Black tern		SC	G4G5	S2	1	1985
Cirsium hillii	Hill's thistle		SC	G3	S3	1	1896
Cistothorus palustris	Marsh wren		SC	G5	S3	1	2002
Clemmys guttata	Spotted turtle		T	G5	S2	6	2007
Coregonus artedi	Lake herring or Cisco		T	GNR	S3	2	2009
Cryptotis parva	Least shrew		T	G5	S1S2	1	1922
Cyclonaias tuberculata	Purple wartyback		T	G5	S2	3	2010
Cypripedium candidum	White lady slipper		T	G4	S2	9	2010
Dennstaedtia punctilobula	Hay-scented fern		T	G5	S1	1	2010
Dichanthelium leibergii	Leiberg's panic grass		T	G4	S2	5	2017
Dorydiella kansana	Leafhopper		SC	GNR	S3	1	2007
Eleocharis engelmannii	Engelmann's spike rush		SC	G4G5	S2S3	1	1893
Eleocharis equisetoides	Horsetail spike rush		SC	G4	S3	4	2010
Eleocharis geniculata	Spike-rush		X	G5	SX	1	1937
Emydoidea blandingii	Blanding's turtle		SC	G4	S2S3	11	2020
Erimyzon claviformis	Creek chubsucker		E	G5	S1	1	1982
Eupatorium sessilifolium	Upland boneset		T	G5	S1	2	1964
Euphyes dukesi	Dukes' skipper		T	G3G4	S2	1	2007
Falco peregrinus	Peregrine falcon		E	G4	S3	1	2018
Gallinula galeata	Common gallinule		T	G5	S3	1	1995
Geum virginianum	Pale avens		SC	G5	S1S2	2	2008
Haliaeetus leucocephalus	Bald eagle		SC	G5	S4	3	2017
Helianthus mollis	Downy sunflower		T	G4G5	S2	1	1980
Hydrastis canadensis	Goldenseal		T	G3G4	S2	5	2015
Ixobrychus exilis	Least bittern		T	G4G5	S3	3	1995
Lampsilis fasciola	Wavyrayed lampmussel		T	G5	S2	5	2010
Lasmigona compressa	Creek heelsplitter		SC	G5	S3	7	2017
Lasmigona costata	Flutedshell		SC	G5	SNR	7	2018
Lepisosteus oculatus	Spotted gar		SC	G5	S2S3	8	2018
Lepyronia angulifera	Angular spittlebug		SC	G3	S3	1	2009
Ligumia recta	Black sandshell		E	G4G5	S1?	1	2010
Lithobates palustris	Pickerel frog		SC	G5	S3S4	9	2018
Mesomphix cupreus	Copper button		SC	G5	S1	3	1947

Scientific Name	Common Name	Federal Status	State Status	Global Rank	State Rank	Occurrences in County	Last Observed in County
Muhlenbergia richardsonis	Mat muhly		T	G5	S2	2	2019
Myotis lucifugus	Little brown bat		SC	G3	S1	2	1980
Myotis septentrionalis	Northern long-eared bat	LT	SC	G1G2	S1	2	1998
Myotis sodalis	Indiana bat	LE	E	G2	S1	4	2005
Myrica pensylvanica	Northern bayberry		T	G5	S2	1	2015
Necturus maculosus	Mudpuppy		SC	G5	S3S4	1	1958
Neonympha mitchellii mitchellii	Mitchell's satyr	LE	E	G2T2	S1	4	2020
Notropis texanus	Weed shiner		X	G5	S1	2	1941
Noturus miurus	Brindled madtom		SC	G5	S2	2	1984
Oarisma poweshiek	Poweshiek skipperling	LE	T	G1	S1	2	2012
Oecanthus laricis	Tamarack tree cricket		SC	G3?	S3	9	2017
Panax quinquefolius	Ginseng		T	G3G4	S2S3	3	1979
Pandion haliaetus	Osprey		SC	G5	S4	2	2016
Pantherophis spiloides	Gray ratsnake		SC	G4G5	S2S3	1	1985
Papaipema beeriana	Blazing star borer		SC	G2G3	S2	5	2017
Papaipema maritima	Maritime sunflower borer		SC	G3	S2	1	1988
Papaipema sciata	Culvers root borer		SC	G3	S3	2	1996
Papaipema silphii	Silphium borer moth		T	G3G4	S1	3	1989
Papaipema speciosissima	Regal fern borer		SC	G4	S2S3	1	1988
Platanthera ciliaris	Orange- or yellow-fringed orchid		E	G5	S1S2	1	1893
Pleurobema sintoxia	Round pigtoe		SC	G4G5	S3	10	2018
Poa paludigena	Bog bluegrass		T	G3G4	S2	3	2006
Polygala cruciata	Cross-leaved milkwort		SC	G5	S3	1	1893
Rallus elegans	King rail		E	G4	S2	3	1992
Scleria triglomerata	Tall nut rush		SC	G5	S3	1	1951
Setophaga cerulea	Cerulean warbler		T	G4	S3	3	2018
Setophaga citrina	Hooded warbler		SC	G5	S3	2	2018
Silene stellata	Starry campion		T	G5	S2	1	1860
Sistrurus catenatus	Eastern massasauga	LT	SC	G3	S3	22	2018
Sisyrinchium albidum	Common blue-eyed grass		X	G5?	SX	1	2014
Sisyrinchium strictum	Blue-eyed-grass		SC	G3	S2	1	1969
Speyeria idalia	Regal fritillary		E	G3?	SH	2	1958
Sphaerium fabale	River fingernail clam		SC	G5	SNR	3	1954
Spiza americana	Dickcissel		SC	G5	S3	4	2016

Scientific Name	Common Name	Federal Status	State Status	Global Rank	State Rank	Occurrences in County	Last Observed in County
Sporobolus heterolepis	Prairie dropseed		SC	G5	S3	5	2014
Stylurus amnicola	Riverine snaketail		SC	G4	S2S3	1	2000
Stylurus laurae	Laura's snaketail		SC	G4	S3	2	1997
Terrapene carolina carolina	Eastern box turtle		SC	G5T5	S2S3	8	2008
Thaspium chapmanii	Meadow-parsnip		SC	GNR	SNR	2	1948
Trichophorum clintonii	Clinton's bulrush		SC	G4	S3	1	1951
Truncilla truncata	Deertoe		SC	G5	S2S3	1	2010
Utterbackia imbecillis	Paper pondshell		SC	G5	S2S3	2	
Valeriana edulis var. *ciliata*	Edible valerian		T	G5T3	S2	1	1954
Vallonia parvula	Trumpet vallonia		SC	G4	SNR	1	
Ventridens suppressus	Flat dome		SC	G5	SNR	6	1939
Venustaconcha ellipsiformis	Ellipse		SC	G4	S3	12	2018
Villosa iris	Rainbow		SC	G5	S3	20	2018
Zizania aquatica	Wild rice		T	G5	S2S3	2	2010

Appendix 4

NOTICE OF PROJECT PLAN PUBLIC HEARING

The City of Jackson will hold a public hearing on the proposed Drinking Water State Revolving Fund Project Plan for the Lead Service Line Replacement Project at the City Council meeting on June 8, 2021, at 6:30 p.m. In accordance with City of Jackson Resolution No. 2021-17, and state and federal guidelines designed to mitigate the spread of COVID-19, the hearing will be conducted virtually. The hearing will be live-streamed on the City of Jackson Facebook page and will air on Cable Channel 21-JTV.

The Project Plan focuses on replacing lead service lines within the City of Jackson. Project construction will involve the replacement of selected lead service lines with new copper service lines to comply with the Safe Drinking Water Act. There are no negative long-term impacts associated with the proposed project. Construction activities would have only a short-term disruption for individual customers.

The estimated cost for construction of the proposed improvements is $3,300,000, with a resulting annual debt payment of approximately $199,391. The City of Jackson is eligible for $3 million from the Disadvantaged Community Lead Service Line Replacement Program and intends to use this allotment for construction of the proposed improvements. The remaining $300,000 for the project will be funded by the City separately.

Starting May 7, 2021, a copy of the draft Project Plan will be available for public review on the City of Jackson website at cityofjackson.org/water-department. Issues viewing the Project Plan should be directed to the Public Information Officer, Aaron Dimick, email: adimick@cityofjackson.org, phone: (517) 768-6458. An overview of the project will be presented at the City Council meeting on May 25, 2021, at 6:30 p.m. The meeting will be live-streamed on the City of Jackson Facebook page and will air on Cable Channel 21-JTV.

All interested parties are invited to submit written comments on the proposed Project Plan. All comments must be received by 5:00 p.m. on June 8, 2021, to be considered as part of the public record. Written comments may be mailed or placed in the drop box in front of City Hall: City of Jackson, Attn: City Clerk, 161 W Michigan Ave, Jackson, MI 49201, or emailed to comments@cityofjackson.org.