AGENDA

REGULAR MEETING OF THE
WINDSOR HEIGHTS CITY COUNCIL
Thursday, January 23, 2025 - 6:00 PM
WINDSOR HEIGHTS COUNCIL CHAMBERS - 1133 66th ST
ZOOM: https://us02web.zoom.us/j/7832856334
Meeting ID: 783 285 6334

Notice to the Public: If you would like the supporting documents and information, please call City Hall by noon the day of the meeting. Copies of City Council Agendas are free to the public. In consideration of all, if you have a cell phone, please turn it off or put it on silent ring. The use of obscene and vulgar language, hate speech, racial slurs, slanderous comments, and any other disruptive behavior during the Council meeting will not be tolerated and the offender may be barred by the presiding officer from further comment before the Council during the meeting and/or removed from the meeting.

1. **Call to Order/Roll Call/Pledge of Allegiance**

2. **Approval of the Agenda**

3. **Public Forum:** This is time set aside for comments from the public on topics of City business other than those listed on the agenda. No action may be taken. Please come to the podium, state your name and address for the record and keep your comments to no more than 5 minutes.

4. **Consent Agenda:** Any item on the Consent Agenda may be removed for separate consideration.

   A. Approve Minutes of the Regular Council Meeting on December 16, 2024
   B. Approve Financial Reports
   C. Approve Liquor License - Wal-Mart Supercenter #1764 - 1001 73rd St
   D. Approve Liquor License - Kum & Go # 4098 - 7229 University Ave
   E. Approve Liquor License - Sam's Club #6344 - 1101 73rd St
   F. Approve Resolution No. 2025-01 - A Resolution Naming City Depositories and Deposit Limits
   G. Approve Resolution No. 2025-02 - A Resolution Naming the Des Moines Register as the City's Official Newspaper
   H. Approve Resolution No. 2025-03 - A Resolution Authorizing The City Of Windsor Heights To Submit An Application For Funding From The Federal Surface Transportation Block Grant Set-Aside Program To The Des Moines Area Metropolitan Planning Organization (MPO) For The Partial Funding Of The Construction Of The Windsor Trail Reconstruction And Further Approving The Application Which Obligates The City Of Windsor Heights To Matching Funds For The Construction Of Said Project
   I. Approve Resolution No. 2025-04 - A Resolution Authorizing The City Of Windsor Heights, Iowa To Submit An Application For Funding From The Federal Surface Transportation Block

The agenda was posted on the official bulletin boards, posted to www.windsorheights.org, and city social media platforms in compliance with the requirements of city ordinances and the open meetings law. Scan the QR Code to visit our online Agenda Center. Select the meeting date and view the agenda packet including supporting documents and staff reports.

Grant Program (STBG) To The Des Moines Area Metropolitan Planning Organization (MPO) For The Partial Funding Of The Construction Of 73rd Street Phase 1 And Further Approving The Application Which Obligates The City Of Windsor Heights To Matching Funds For The Construction Of Said Project

J. Approve 73rd Street Phase 1 STP-U-8477(615)—70-77 Pay Request 8

K. Approve Proclamation for Slavery and Human Trafficking Prevention Month January 2025

L. Approve Resolution No. 2025-08 - A Resolution Establishing A Policy For Sharing Third Party Messaging

M. Approve City Administrator to Execute YMCA - Windsor Heights Colby Park Use Agreement

N. Approve Resolution No. 2025-09 - A Resolution Approving the 28E Agreement For Assistance For Polk County Area Fire and Rescue Services

O. Approve Purchase of Replacement CEC Tables

5. **Action Items:**

A. Consideration of Resolution No. 2025-06 - A Resolution Authorizing The City To Submit To The Us Department Of Transportation A Rebuilding American Infrastructure With Sustainability And Equity (RAISE) Grant Application & Commitment To Fund 20% Of The Project

B. Consideration of Resolution No. 2025-05 - A Resolution For Adopting 2024 Polk County Hazard Mitigation Plan

C. Consideration of Equipment Revolving Program (ERP) Ambulance Acquisition

D. Consideration of Resolution No. 2025-07 - A Resolution Accepting The Acquisition Of Real Estate Interests And Authorizing Acquisition Of Such Real Property

E. Consideration of Resolution No. 2025-10 - A Resolution Approving FY26 Non-Union Salary Ranges

F. Discuss the Capital Improvement Plan (CIP)

6. **Reports:**

A. Mayor, Council Reports and Committee Updates, and Administration Reports

B. Equipment Revolving Program (ERP) Draft

C. Iowa DOT Notification of Work at 63rd and University Ave.

7. **Adjourn** Immediately following the regular Council meeting, Council will have an exempt session pursuant to Iowa Code section 20.17(3)—Negotiating sessions, strategy meetings of public employers, mediation, and the deliberative process of arbitrators shall be exempt from the provisions of chapter 21.

The agenda was posted on the official bulletin boards, posted to www.windsorheights.org, and city social media platforms in compliance with the requirements of city ordinances and the open meetings law. Scan the QR Code to visit our online Agenda Center. Select the meeting date and view the agenda packet including supporting documents and staff reports.

City of Windsor Heights Regular Business Meeting Minutes
Monday, December 16, 2024 - 6:00 PM
WINDSOR HEIGHTS COUNCIL CHAMBERS - 1133 66th ST

1. **Call to Order/Roll Call/Pledge of Allegiance**

   Mayor Mike Jones called the meeting to order at 6:00 PM. Members present: Susan Skeries, Michael Libbie, Lauren Campbell, Joseph Jones, and Threase Harms Staff present: City Administrator Adam Plagge, City Attorney Erin Clanton, City Clerk Adam Strait, Finance Director Rachelle Swisher, Police Chief Pete Roth, Fire Chief Jim Mease, Public Works Director Andy Larson, City Engineer Justin Ernst

2. **Approval of the Agenda**

   Motion by Susan Skeries to APPROVE. Seconded by Michael Libbie. Motion passed 5-0.

3. **Public Forum:** This is time set aside for comments from the public on topics of City business other than those listed on the agenda. No action may be taken. Please come to the podium, state your name and address for the record and keep your comments to no more than 5 minutes.

   No public comment given.

4. **Consent Agenda:** Any item on the Consent Agenda may be removed for separate consideration.

   Motion by Susan Skeries to APPROVE. Seconded by Michael Libbie. Motion passed 5-0.

   A. Approve Minutes of the Regular Council Meeting on November 18, 2024

   B. Approve Financial Reports

   C. Approve Liquor License - Centerfield Sports Bar - 6555 University Ave

   D. Approve 73rd Street Phase 1 STP-U-8477(615)—70-77 Pay Request 7

   E. Approve Acceptance of Payments To Complete Plat Of Surveys and Property Transfers Along North Walnut Creek

   F. Approve FY24 Annual Finance Report

   G. Approve Resolution No. 2024-69 - A Resolution Approving Balance Transfers for the City of Windsor Heights, IA

   H. Approve Tobacco License - Casey's #4372 - 6961 UNIVERSITY AVE

   I. Approve Resolution No. 224-70 - A Resolution to Appoint a Member and Alternate Member to the Polk County 911 Service Board

   J. Approve Resolution No. 2024-71 - A Resolution to Appoint

Members and Alternate Members to the Polk County Emergency Management Commission

K. Approve Resolution No. 2024-71 - A Resolution Appointing Commissioner And Alternate Commissioner To The Des Moines Area Regional Transit Authority ("Dart") For 2025

L. Approve Resolution No. 2024-73 - A Resolution Appointing Regular And Alternate Member Representatives To The Metropolitan Planning Organization (MPO) For 2025

M. Approve Resolution No. 2024-74 - A Resolution Approving Metro Waste Authority Primary Board And Alternate Board Appointments

N. Approve Resolution No. 2024-75 - A Resolution Approving Committee Appointments

O. Approve 2025 Fee Schedule

P. Approve Salt Shed Improvements Project Pay App #2

Q. Approve Acceptance of Salt Shed Improvement Poject Certificate of Completion

5. **Action Items:**

A. Discuss Proposed YMCA Summer Camp at Colby Park

Discussed a proposed YMCA Summer Camp at Colby Park. The camp would operate from approximately 6 am to 6 pm, with flexibility in the start time. The YMCA would offer a $1,000 cash donation for the use of the park and discounted rates for Windsor Heights residents. The camp would accommodate 60 to 75 kids, with the possibility of reducing the number if necessary. Discussion also included the possibility of using the Community Center for activities on rain days and the need for coordination with other park users. Council directed staff to bring a formal agreement back for approval.

B. Consideration of Resolution No. 2024-76 - A Resolution To Provide For A Notice Of Public Hearing On The Proposed Plans, Specifications, Form Of Contract, And Estimated Total Cost For The 68th Street South Reconstruction Project And For The Taking Of Bids On Said Project

Justin Ernst presented the item. The public hearing for the bids will be held during the February 3 council meeting. Discussion did include CenturyLink's decision to adjust

services due to the project. City staff clarified that there were no restrictions preventing CenturyLink from continuing to offer any services due to the project, but it was a private business decision. Council directed staff to review taking the concerns to the Utilities Commission. Motion by Susan Skeries to APPROVE. Seconded by Threase Harms. Motion passed 5-0.

C. Consideration of 63rd Street Barrier

Justin Ernst presented the item. Concerns were raised about the need for the barrier due to a minimal number of traffic accidents at the intersection. There was favorable discussion on the barrier as it offered an opportunity for public art and beautification. Motion by Threase Harms to APPROVE the 63rd Street Barrier and Sign Alternative D. Seconded by Lauren Campbell. Roll call vote: Aye - Joseph Jones, Lauren Campbell, Threase Harms, Nay - Susan Skeries, Michael Libbie. Motion Passed 3-2.

D. Consideration of Colby Park Food Truck Plaza Seating

Adam Plagge and Justin Ernst presented the item. This was first presented at the November 18 meeting when Council provided design feedback on the original three designs presented. City engineers took the feedback and designed the presented new layout of seating. Motion by Threase Harms to APPROVE. Seconded by Michael Libbie. Motion passed 5-0.

E. Consideration of the 2025 Special Events Calendar

Susan Skeries presented the item. National Night Out is still tentative as it is a Police Department planned event and factors such as staffing determine the departments ability to host the event. A date night Movies in the Park is still being looked for late summer as well. Motion by Susan Skeries to APPROVE. Seconded by Threase Harms. Motion passed 5-0.

F. Discuss 2025 City Council Goals

Adam Plagge presented the item. Council had no changes for the Council Goals for 2025. City staff will formalize the goals and bring back a final version for approval.

6. **Reports:**

A. Mayor, Council Reports and Committee Updates, and Administration Reports

Threase Harms - Thank you to everyone who came and helped with Windsor Wonderland. Adam P is a rockstar, consistently following through. Thanks to the Public Works team for setting everything up, and thanks to Nate for a lot of the CEC follow-through. On Thursday, the tree went up, and many tasks were completed, making the job much easier. The addition of the "Field of Trees" is fantastic. It became a great photo opportunity, with many people taking pictures. There were lots of suggestions and advice for moving forward, and I appreciate the Public Works team for making it happen. It

looked beautiful and awesome. Thank you to all the volunteers—we had plenty! The weather was perfect, and I can't thank everyone enough for their contributions, both big and small. We are planning to put out an evaluation after Christmas to gather feedback and recommendations for the event. Thank you all for your continued support. I'm amazed at how many people showed up—thousands came, and I'm glad we could make this event available for people to enjoy. This week, we also had the Metro Waste Tour last Tuesday. A lot of local elected officials attended the tour, which was a valuable experience to better understand the reasons behind the "whys and why-nots" of recycling. Until you take the tour, you don't fully grasp the process. Thank you for a wonderful year, and I wish everyone happy holidays and a happy New Year!

Lauren Campbell - Thank you to everyone for their contributions to WW. I also want to express my gratitude for a great year filled with special events. Bravo meet. I missed the last meeting, but I'm pleased to share that grants were both received and sent out. This funding cycle presented some challenges, and while some grants were not as high as expected, they were still incredibly valuable.

Michael Libbie - The dates for Nights in the Heights are set from the final Tuesday in June to the first Tuesday in August. Thank you to AJ for the morning meeting. WW was a success, and we were fortunate to have warm weather. The final Saturday Coffee with Council will be held on the 28th.

Joseph Jones - The next big DART Reimagine meeting will take place on January 13. It will be an interactive workshop focused on developing a game plan to be completed by the end of 2025.

Susan Skeries - It has been a busy time since the last council meeting, with several Metro Waste activities and the Catch Des Moines holiday meeting. Congratulations to Lauren for receiving an award! Special events for this month have been canceled, and we will reconvene in January. Thank you to Mike, AJ, and Threase for attending the Metro Waste activities. The upcoming Wake Up Windsor Heights event will take place on January 9th, from 8 to 9 AM, and reservations are needed. The West Side Legislative event is scheduled for January 10th at the Community Center, and the DSM Partnership meeting will be on January 13th. Lastly, a huge thank you to Threase and all the volunteers for their efforts with Windsor Wonderland. To continue hosting events, we need more volunteers—especially Windsor Heights residents. We can't do it without more help, so please keep spreading the word. Enjoy the holidays, and let's work together to make 2025 a success!

Adam Plagge - The staff holiday will be on Tuesday, and City Hall will close around 4 PM. Work on 73rd Street is ongoing, but the street is expected to open on Friday.

B. Quartly Police Department Report

7. **Closed Session** Per Iowa Code §21.5.1 (j): To discuss the purchase of particular real estate only where premature disclosure could be reasonably expected to increase the price the governmental body would have to pay for that property. The minutes and the tape recording of a session closed under this paragraph shall be available for public examination when the transaction discussed is completed.

   Motion by Threase Harms to enter Closed Session at 7:08PM. Seconded by Susan Skeries. Motion Passed 5-0.
   Motion by Threase Harms to exit Closed Session at 7:30PM. Seconded by Susan Skeries. Motion Passed 5-0.

8. **Adjourn**

   Motion by Threase Harms to adjourn at 7:531M. Seconded by Susan Skeries. Motion passed 5-0.

_____

Mike Jones, Mayor

_____

Attest: Adam Strait, City Clerk

STAFF REPORT
CITY COUNCIL
January 23, 2025

TO: CITY COUNCIL

FROM: Rachelle Swisher, Finance Director

SUBJECT: Approve Financial Reports

GENERAL INFORMATION

ATTACHMENTS

1. Balance Sheet
2. Budget Report
3. Claims Report 12.12.24-1.6.25
4. Revenue Report

BALANCE SHEET
CALENDAR 12/2025, FISCAL 6/2026

ACCOUNT NUMBER	ACCOUNT TITLE	MTD BALANCE	YTD BALANCE
001-000-1110	CASH - GENERAL	.00	120,194.83
110-000-1110	CASH - RUT	.00	25,910.31
112-000-1110	CASH - EMP BENEFIT FUND	.00	132,977.64-
113-000-1110	CASH - POLICE PENSION	.00	.00
114-000-1110	CASH - POLICE TRUST	.00	25,477.41-
115-000-1110	CASH - POLICE PREFORFEIT	.00	1,602.32-
119-000-1110	CASH - EMERGENCY FUND	.00	.00
121-000-1110	CASH - LOCAL OPTION SALES TAX	.00	2,170,658.48
125-000-1110	CASH - TIF	.00	2,337,447.17
145-000-1110	CASH - URBAN RENEWAL FUNDS	.00	34,666.42
200-000-1110	CASH - DEBT SERVICE	.00	364,797.66
302-000-1110	CASH - SIDEWALK PROGRAM	.00	47,995.00
303-000-1110	CASH - COLBY PARK	.00	1,969,428.94-
306-000-1110	CASH - HICKMAN ROAD PROJECT	.00	.00
309-000-1110	CASH - 2014 A STREET PROJECT	.00	.00
311-000-1110	CASH - TRAIL CONNECTION	.00	.00
312-000-1110	CASH - 63/HICKMAN STREETSCAPE	.00	.00
313-000-1110	CASH - 2017/18 STREET PROJECTS	.00	.00
314-000-1110	CASH - UNIVERSITY AVE PROJECT	.00	16,485.00-
315-000-1110	CASH - 2018 HMA PROJ	.00	.00
316-000-1110	CASH - 2018 PCC PATCHING PROJ	.00	.00
317-000-1110	CASH - WAL CREEK BIKE HUB/BRID	.00	.00
318-000-1110	CASH - CEC SOLAR PROJECT	.00	97,185.00-
319-000-1110	CASH - 2020 STREET PROJECTS	.00	1,798.50-
320-000-1110	CASH - 2020 PCC PATCHING	.00	.00
321-000-1110	CASH - WAL CREEK STREAM PROJ	.00	.00
322-000-1110	CASH - 73RD ST	.00	772,763.87-
323-000-1110	CASH - 68TH STREET NORTH	.00	126,071.06
324-000-1110	CASH - 2023 HMA OVERLAY	.00	.00
325-000-1110	CASH - 2023 PCC PATCHING PROJ	.00	.00
326-000-1110	CASH - 68TH ST SOUTH	.00	124,519.05
327-000-1110	CASH - SALT SHED	.00	1,646.16
328-000-1110	CASH - 74TH ST	.00	19,767.50-
329-000-1110	CASH - PUBLIC SAFETY PARKING L	.00	.00
330-000-1110	CASH - FORREST COURT	.00	7,592.00-
333-000-1110	CASH - DOG PARK UPDATES	.00	.00
347-000-1110	CASH - FLOOD MITIGATION	.00	.00
348-000-1110	CASH - ARPA FUNDS	.00	.17-
349-000-1110	CASH - FUTURE STREET PROJECTS	.00	99,118.97
350-000-1110	CASH - EQUIP REVOLVE FUND	.00	2,915.68
350-000-1180	CASH - EQUIP REVOLVE - POLICE	.00	153,295.80-
350-000-1181	CASH - EQUIP REVOLVE - FIRE/EM	.00	105,021.88
350-000-1182	CASH - EQUIP REV - NOT USED	.00	.00
350-000-1183	CASH - EQUIP REV - PUBLIC WORK	.00	48,457.82-
350-000-1185	CASH - EQUIP REVOLVE - PARKS	.00	.00
350-000-1186	CASH - EQUIP REVOLVE - CEC	.00	117,682.59
350-000-1187	CASH - EQUIP REVOLVE - IT DEPT	.00	1,396.05
600-000-1110	CASH - WATER	.00	103,254.44-
610-000-1110	CASH - SEWER	.00	1,669.56
670-000-1110	CASH - LANDFILL/GARBAGE	.00	117,230.43
740-000-1110	CASH - STORM WATER	.00	516,291.11

ACCOUNT NUMBER	ACCOUNT TITLE	MTD BALANCE	YTD BALANCE
805-000-1110	CASH - INTERNAL SERVICE FUND	.00	.00
810-000-1110	CASH - REVOLVING FUND	.00	.00
	CASH TOTAL	.00	2,965,146.00
001-000-1115	RESERVE CASH - COMM CENTER	.00	.00
	RESERVE CASH TOTAL	.00	.00
115-000-1120	PETTY CASH - POLICE FOREITURE	.00	1,000.00
	PETTY CASH TOTAL	.00	1,000.00
001-000-1150	IPAIT - GENERAL	.00	1,855,412.06
110-000-1150	IPAIT - RUT	.00	942,871.73
112-000-1150	IPAIT - EMPLOYEE BENEFITS	.00	790,816.57
121-000-1150	IPAIT - LOCAL OPTION SALES TAX	.00	.00
125-000-1150	IPAIT - TIF	.00	389,248.18
145-000-1150	IPAIT - URBAN RENEWAL FUNDS	.00	217,745.98
200-000-1150	IPAIT - DEBT SERVICE	.00	468,319.03
303-000-1150	IPAIT - COLBY PARK	.00	1,584,290.86
314-000-1150	IPAIT - UNIVERSITY AVE PROJECT	.00	28,613.52
319-000-1150	IPAIT - 2020 STREET PROJECTS	.00	12,236.23
322-000-1150	IPAIT - 73RD STREET	.00	411,143.55
323-000-1150	IPAIT - 68TH STREET NORTH	.00	101,252.28
326-000-1150	IPAIT - 68TH ST SOUTH	.00	.00
348-000-1150	IPAIT - ARPA FUNDS	.00	.00
349-000-1150	IPAIT - FUTURE STREET PROJECTS	.00	330,347.11
350-000-1150	IPAIT - EQUIP REVOLVING	.00	1,056,193.93
670-000-1150	IPAIT - LANDFILL/GARBAGE	.00	213,138.90
740-000-1150	IPAIT - STORM WATER	.00	1,581,240.45
	IPAIT TOTAL	.00	9,982,870.38
001-000-1151	IPAIT 201-TIF BONDS GENERAL	.00	.00
322-000-1151	IPAIT 201-TIF BONDS 73RD ST	.00	4,552,924.71
326-000-1151	IPAIT 201-TIF BONDS 68TH ST S.	.00	2,766,750.95
	IPAIT 201-TIF BONDS TOTAL	.00	7,319,675.66
001-000-1160	SAVINGS - 680-5592 - GENERAL	.00	.00
001-000-1161	SAVINGS - KWHB	.00	3,080.67
112-000-1160	SAVINGS - EMP BENEFIT 689-6237	.00	.00
113-000-1160	SAVINGS - 680-2292 - POLICE	.00	.00
114-000-1160	SAVINGS - POLICE TRUST	.00	49,412.19
115-000-1160	SAVINGS - PREF/DEA	.00	3,914.43

ACCOUNT NUMBER	ACCOUNT TITLE	MTD BALANCE	YTD BALANCE
	SAVINGS TOTAL	.00	56,407.29
001-000-1170	CD 082009 - KWHB	.00	11,643.05
600-000-1170	CD 12062707- WATER	.00	107,401.50
810-000-1170	CD 050109 - REVOLVING FUND	.00	.00
	CD'S TOTAL	.00	119,044.55
	TOTAL CASH	.00	20,444,143.88

PCT OF FISCAL YTD 50.0%

ACCOUNT NUMBER	ACCOUNT TITLE	TOTAL BUDGET	MTD BALANCE	YTD BALANCE	PERCENT EXPENDED	UNEXPENDED
	POLICE TOTAL	2,626,800.00	162,988.44	1,113,273.40	42.38	1,513,526.60
	EMERGENCY MANAGEMENT TOTAL	10,700.00	.00	7,151.09	66.83	3,548.91
	FIRE TOTAL	460,873.00	26,759.37	210,702.84	45.72	250,170.16
	AMBULANCE TOTAL	928,838.00	53,049.09	411,209.18	44.27	517,628.82
	BUILDING INSPECTIONS TOTAL	100,000.00	1,676.09	49,231.86	49.23	50,768.14
	ANIMAL CONTROL TOTAL	5,500.00	.00	3,217.00	58.49	2,283.00
	PUBLIC SAFETY TOTAL	4,132,711.00	244,472.99	1,794,785.37	43.43	2,337,925.63
	ROADS, BRIDGES, SIDEWALKS TOTA	791,160.00	69,844.44	421,098.80	53.23	370,061.20
	STREET LIGHTING TOTAL	55,000.00	3,701.62	22,210.81	40.38	32,789.19
	TRAFIC CONTROL & SAFETY TOTAL	.00	.00	.00	.00	.00
	SNOW REMOVAL TOTAL	180,504.00	13,440.82	58,328.26	32.31	122,175.74
	OTHER PUBLIC WORKS TOTAL	29,400.00	732.93	30,905.94	105.12	1,505.94-
	PUBLIC WORKS TOTAL	1,056,064.00	87,719.81	532,543.81	50.43	523,520.19
	WATER,AIR,MOSQUITO CONTRO TOTA	.00	.00	.00	.00	.00
	OTHER HEALTH/SOCIAL SERV TOTA	.00	.00	.00	.00	.00
	HEALTH & SOCIAL SERVICES TOTA	.00	.00	.00	.00	.00
	LIBRARY TOTAL	67,600.00	.00	33,765.26	49.95	33,834.74
	PARKS TOTAL	187,233.00	16,449.20	90,293.34	48.23	96,939.66
	COMMUNITY CTR/ZOO/MARINA TOTA	27,450.00	320.44	15,453.77	56.30	11,996.23
	SPECIAL EVENTS TOTAL	50,000.00	4,750.87	33,683.64	67.37	16,316.36
	COMMUNITY CENTER TOTAL	172,567.00	12,891.64	65,368.28	37.88	107,198.72
	CULTURE & RECREATION TOTAL	504,850.00	34,412.15	238,564.29	47.25	266,285.71
	COMMUNITY BEAUTIFICATION TOTA	.00	.00	.00	.00	.00
	ECONOMIC DEVELOPMENT TOTAL	275,337.00	.00	14,940.52	5.43	260,396.48
	HOUSING & URBAN RENEWAL TOTAL	52,290.00	.00	2,242.00	4.29	50,048.00
	COMMUNITY & ECONOMIC DEV TOTA	327,627.00	.00	17,182.52	5.24	310,444.48
	MAYOR/COUNCIL TOTAL	91,100.00	8,621.10	38,543.75	42.31	52,556.25
	IT DEPARTMENT TOTAL	72,300.00	6,282.04	28,677.10	39.66	43,622.90
	CLERK/TREASURER/ADM TOTAL	837,633.00	59,111.22	447,645.10	53.44	389,987.90
	ELECTIONS TOTAL	1,500.00	.00	.00	.00	1,500.00
	LEGAL SERVICES/ATTORNEY TOTAL	50,000.00	.00	19,948.75	39.90	30,051.25
	OTHER GENERAL GOVERNMENT TOTA	15,000.00	.00	.00	.00	15,000.00
	GENERAL GOVERNMENT TOTAL	1,067,533.00	74,014.36	534,814.70	50.10	532,718.30

ACCOUNT NUMBER	ACCOUNT TITLE	TOTAL BUDGET	MTD BALANCE	YTD BALANCE	PERCENT EXPENDED	UNEXPENDED
	ROADS, BRIDGES, SIDEWALKS TOTA	1,701,483.00	.00	253,639.52	14.91	1,447,843.48
	PARKS TOTAL	.00	.00	.00	.00	.00
	HOUSING & URBAN RENEWAL TOTAL	409,061.00	500.00	19,430.00	4.75	389,631.00
	DEBT SERVICE TOTAL	2,110,544.00	500.00	273,069.52	12.94	1,837,474.48
	ASSETS TOTAL	.00	.00	.00	.00	.00
	POLICE TOTAL	361,000.00	.00	26,585.73	7.36	334,414.27
	FIRE TOTAL	7,500.00	.00	.00	.00	7,500.00
	AMBULANCE TOTAL	.00	.00	.00	.00	.00
	ROADS, BRIDGES, SIDEWALKS TOTA	15,722,130.00	154,804.77	2,060,725.25	13.11	13,661,404.75
	PARKS TOTAL	4,190,000.00	7,635.00	2,437,698.18	58.18	1,752,301.82
	COMMUNITY CENTER TOTAL	148,000.00	.00	87,735.00	59.28	60,265.00
	IT DEPARTMENT TOTAL	17,000.00	.00	38,651.49	227.36	21,651.49-
	CAPITAL PROJECTS TOTAL	.00	.00	59,044.50	.00	59,044.50-
	CAPITAL PROJECTS TOTAL	20,445,630.00	162,439.77	4,710,440.15	23.04	15,735,189.85
	WATER TOTAL	.00	.00	.00	.00	.00
	SEWER/SEWAGE DISPOSAL TOTAL	31,650.00	20.02	535.97	1.69	31,114.03
	LANDFILL/GARBAGE TOTAL	395,902.00	31,832.48	220,017.01	55.57	175,884.99
	STORM WATER TOTAL	332,470.00	10,508.59	101,866.28	30.64	230,603.72
	ENTERPRISE FUNDS TOTAL	760,022.00	42,361.09	322,419.26	42.42	437,602.74
	TRANSFERS IN/OUT TOTAL	2,480,526.00	.00	25,555.73	1.03	2,454,970.27
	TRANSFER OUT TOTAL	2,480,526.00	.00	25,555.73	1.03	2,454,970.27
	TOTAL EXPENSES	32,885,507.00	645,920.17	8,449,375.35	25.69	24,436,131.65

VENDOR NAME	REFERENCE	AMOUNT	VENDOR TOTAL	CHECK#	CHECK DATE
ABSOLUTE CONCRETE CONSTRUCTION	73RD ST PHASE 1 PAY REQUEST #7		72,124.79	57845	12/20/24
AMAZON CAPITAL SERVICES	SHELVING UNITS CLERKS OFFICE		176.88	57846	12/20/24
ASSURITY	ASSURITY	724.60		5354	12/18/24
ASSURITY	INSURANCE	11.76	736.36	5362	12/23/24
BANKERS TRUST COMPANY	MICROSOFT FEES		5,000.51	57848	12/20/24
BEDWELL GARDENS	PEAT MOSS		260.00	57849	12/20/24
BREESE, TAMMY	DEC CELL PHONE		80.00	57850	12/20/24
BULLZEYE, INC	OCT CEC CLEANINGS		3,104.00	57851	12/20/24
CAPITAL SANITARY SUPPLY	SUPPLIES		573.50	57852	12/20/24
DES MOINES REGISTER	NEWSPAPER		91.98	57853	12/20/24
DES MOINES WATER WORKS	6900 SCHOOL ST		95.57	57854	12/20/24
ELECTRICAL ENG.& EQUIPMENT	SUPPLIES		479.01	57855	12/20/24
ELECTRONIC ENG. CO.	SUPPLIES		167.90	57856	12/20/24
EO JOHNSON	CH COPIER		141.29	57857	12/20/24
FEDERAL TAX DEPOSIT	FED/FICA TAX	30,945.92		5352	12/18/24
FEDERAL TAX DEPOSIT	FED/FICA TAX	31,125.14	62,071.06	5365	12/30/24
FIRE SERVICE TRAINING BUREAU	ANNUAL FIRE SCHOOL		100.00	57858	12/20/24
GALLS INC	STAFF NAMEPLATES		130.17	57859	12/20/24
GANNETT IOWA LOCALIQ	PUBLICATIONS		696.99	57860	12/20/24
GREENFIELD CONTRACTORS LLC	SALT SHED		10,767.41	57861	12/20/24
HY-VEE ACCOUNTS RECEIVABLE	BAKERY WINDSOR WONDERLAND		622.29	57862	12/20/24
ICMA RETIREMENT TRUST	ICMA	806.05		5350	12/18/24
ICMA RETIREMENT TRUST	ICMA	1,889.75		5360	12/19/24
ICMA RETIREMENT TRUST	ICMA	806.41	3,502.21	5364	12/30/24
IOWA MUNICIPAL FINANCE OFFICER	N.LEUTHOLD BENEFITTED MEMBERSH		30.00	57863	12/20/24
INTERSTATE ALL BATTERY	BATTERIES		108.25	57864	12/20/24
DEPT OF HUMAN SERVICES	JAN 2025 STATE SHARE GEMT		2,558.77	57865	12/20/24
IPERS	PROTECT IPERS	36,564.13		5349	12/18/24
IPERS	HEALTH PRETAX	32.50	36,596.63	5363	12/30/24
IRLBECK, MICHAEL	DEC CELL PHONE		80.00	57866	12/20/24
ISOLVED BENEFIT SERVICES	FLEX - BENEFITS	1,714.00		5353	12/18/24
ISOLVED BENEFIT SERVICES	FLEX - BENEFITS	1,714.00	3,428.00	5366	12/30/24
COOKE CO., THE J.P.	PET LICENSE TAGS		125.94	57867	12/20/24
JC MIDWEST SERVICES LLC	PAY REQUEST - FINAL RETAINAGE		6,944.61	57868	12/20/24
JOHNSON, KYLE	DEC CELL PHONE		80.00	57869	12/20/24
KIMBALL MIDWEST	SUPPLIES		927.10	57870	12/20/24
LARSON, ANDY	DEC CELL PHONE		80.00	57871	12/20/24
LEUTHOLD, NATE	DEC CELL PHONE		80.00	57872	12/20/24
MANHATTANLIFE	MANHATTAN LIFE		234.34	57844	12/18/24
WINDSOR HEIGHTS MP LLC	PIZZA MOVIES IN THE PARK		128.00	57873	12/20/24
MEASE, JIM	DEC CELL PHONE		80.00	57874	12/20/24
MENARDS	EQUIPMENT		333.96	57875	12/20/24
MIDWEST COMFORT HEATING & COOL	PRESSURE SWITCH		96.00	57876	12/20/24
NICHOLS EQUIPMENT LL	FUNNEL BUCKET		895.00	57903	12/23/24
NORRIS, CHAD	DEC CELL PHONE		80.00	57877	12/20/24
O'REILLY AUTO PARTS	SUPPLIES		18.99	57878	12/20/24
OVERHEAD DOOR COMPANY	DOOR REPAIRS		271.65	57879	12/20/24
PITNEY BOWES CREDIT CORP	POSTAGE MACHINE POWERGUARD		149.00	5361	12/19/24
PLAGGE, ADAM	DEC CELL PHONE		80.00	57880	12/20/24
PREMIER AUTOMOTIVE	VEHICLE #115		67.29	57881	12/20/24
PROFESSIONAL PRODUCTS	CLOTHING ALLOWANCE		221.00	57882	12/20/24
QPS EMPLYMENT GROUP	HANKINS 12/7/24		921.60	57883	12/20/24
RANGEMASTERS TRAINING CTR	CLOTHING ALLOWANCE		69.34	57884	12/20/24
NICOLE MICHELS	WH ORNAMENTS		162.00	57885	12/20/24

VENDOR NAME	REFERENCE	AMOUNT	VENDOR TOTAL	CHECK#	CHECK DATE
ROBERTS, JASON	DEC CELL PHONE	80.00		57886	12/20/24
ROBERTS, JASON	12/20/24 PAYCHECK	1,292.27	1,372.27	57902	12/20/24
ROTH, PETE	DEC CELL PHONE		80.00	57887	12/20/24
SECURITY EQUIPMENT INC.	ACCESS HOSTING		1,069.14	57888	12/20/24
SPOTFREE CAR WASH	FLEET CAR WASH		761.60	57890	12/20/24
SPRAYER SPECIALTIES INC.	SUPPLIES		506.15	57891	12/20/24
STRAIT, ADAM	DEC CELL PHONE		80.00	57892	12/20/24
SUMMIT FIRE PROTECTION	SUPPLIES		571.11	57893	12/20/24
SWISHER, RACHELLE	DEC CELL PHONE		80.00	57894	12/20/24
TREASURER STATE OF IOWA	STATE TAXES		9,331.33	5351	12/18/24
UNPLUGGED WIRELESS COMMUNICATI	RADIO ANTENNAS		219.24	57895	12/20/24
UPHDM OCCUPATIONAL MED	PHYSICAL		814.54	57896	12/20/24
WEDDING SHOW PRODUCTIONS	JAN/AUG WEDDING SHOWS		2,600.00	57897	12/20/24
WEESNER, MICHAELINE	POSTAGE DUE ON ORNAMENT		4.39	57904	12/23/24
WEX FLEET UNIVERSAL	FUEL		2,142.97	57898	12/20/24
WRIGHT OUTDOOR SOLUTIONS	FALL BED CLEANUP		2,380.00	57899	12/20/24
ZIEGLER INC.	SUPPLIES		238.40	57900	12/20/24
ZIMCO SUPPLY CO	ICE MELT		547.00	57901	12/20/24
			==========		
	Accounts Payable Total		238,567.53		

Payroll Checks

001	GENERAL	73,919.73
110	ROAD USE TAX	11,908.82
670	LANDFILL/GARBAGE	158.95
740	STORM WATER	1,256.18

	Total Paid On: 12/20/24	87,243.68
001	GENERAL	68,611.53
110	ROAD USE TAX	11,306.44
670	LANDFILL/GARBAGE	95.36
740	STORM WATER	1,365.92

	Total Paid On: 1/03/25	81,379.25
		==========
	Total Payroll Paid	168,622.93
		==========
	Report Total	407,190.46
		==========

CLAIMS REPORT

CLAIMS FUND SUMMARY

Payroll Checks: 12/12/2024- 1/06/2025

FUND	NAME	AMOUNT
001	GENERAL	262,771.55
110	ROAD USE TAX	48,508.77
112	EMPLOYEE BENEFITS	2,716.05
322	73RD STREET PROJECT	72,124.79
327	SALT SHED PROJECT	16,849.52
670	LANDFILL/GARBAGE	350.77
740	STORM WATER	3,869.01
	TOTAL FUNDS	407,190.46

REVENUE REPORT
CALENDAR 11/2024, FISCAL 5/2025

PCT OF FISCAL YTD 41.6%

ACCOUNT NUMBER	ACCOUNT TITLE	BUDGET ESTIMATE	MTD BALANCE	YTD BALANCE	PERCENT RECVD	UNCOLLECTED
	GENERAL TOTAL	4,722,417.00	179,284.34	2,172,098.34	46.00	2,550,318.66
	ROAD USE TAX TOTAL	780,000.00	68,049.51	326,535.34	41.86	453,464.66
	EMPLOYEE BENEFITS TOTAL	511,306.00	99,104.54	352,166.66	68.88	159,139.34
	POLICE PENSION TOTAL	.00	.00	.00	.00	.00
	POLICE TRUST TOTAL	10,200.00	19.57	122.32	1.20	10,077.68
	POLICE PREFORFEITURE TOTAL	1,015.00	.57	7.10	.70	1,007.90
	EMERGENCY FUND TOTAL	.00	.00	.00	.00	.00
	LOCAL OPTION SALES TAX TOTAL	1,440,000.00	101,234.14	588,688.35	40.88	851,311.65
	TAX INCREMENT FINANCING TOTAL	2,317,282.00	32,259.84	1,111,018.55	47.94	1,206,263.45
	URBAN RENEWAL TOTAL	.00	.00	.00	.00	.00
	DEBT SERVICE TOTAL	3,130,750.00	29,040.15	589,940.15	18.84	2,540,809.85
	SIDEWALK PROGRAM TOTAL	.00	.00	.00	.00	.00
	COLBY PARK TOTAL	335,400.00	.00	.00	.00	335,400.00
	HICKMAN ROAD PROJECT TOTAL	.00	.00	.00	.00	.00
	2014A STREETS PROJECTS TOTAL	.00	.00	.00	.00	.00
	TRAIL CONNECTION TOTAL	.00	.00	.00	.00	.00
	63/HICKMAN ST SCAPE TOTAL	.00	.00	.00	.00	.00

PCT OF FISCAL YTD 41.6%

ACCOUNT NUMBER	ACCOUNT TITLE	BUDGET ESTIMATE	MTD BALANCE	YTD BALANCE	PERCENT RECVD	UNCOLLECTED
	2017/18 Capital Projects TOTA	.00	.00	.00	.00	.00
	UNIVERSITY AVE ST PROJECT TOTA	.00	.00	.00	.00	.00
	2018 HMA RESURFACING PROJ TOTA	.00	.00	.00	.00	.00
	2018 PCC PATCHING PROJECT TOTA	.00	.00	.00	.00	.00
	WAL CREEK BIKE HUB/BRIDGE TOTA	.00	.00	.00	.00	.00
	CEC SOLAR PROJECT TOTAL	.00	.00	.00	.00	.00
	2020 STREET PROJECTS TOTAL	.00	.00	.00	.00	.00
	2020 PCC PATCHING TOTAL	.00	.00	.00	.00	.00
	WAL CREEK STREAM PROJECT TOTA	.00	.00	.00	.00	.00
	73RD STREET PROJECT TOTAL	2,382,300.00	.00	.00	.00	2,382,300.00
	68TH ST NORTH TOTAL	.00	.00	.00	.00	.00
	2023 HMA OVERLAY PROJECT TOTA	.00	.00	.00	.00	.00
	2023 PCC PATCHING PROJECT TOTA	.00	.00	.00	.00	.00
	68TH ST SOUTH TOTAL	3,760,000.00	.00	.00	.00	3,760,000.00
	SALT SHED PROJECT TOTAL	.00	.00	.00	.00	.00
	74TH ST PROJECT TOTAL	.00	.00	.00	.00	.00
	PUBLIC SAFETY PARKING LOT TOTA	.00	.00	.00	.00	.00

PCT OF FISCAL YTD 41.6%

ACCOUNT NUMBER	ACCOUNT TITLE	BUDGET ESTIMATE	MTD BALANCE	YTD BALANCE	PERCENT RECVD	UNCOLLECTED
	FORREST CRT MILL/OVERLAY TOTA	.00	.00	.00	.00	.00
	DOG PARK UPDATES TOTAL	.00	.00	.00	.00	.00
	FLOOD MITIGATION TOTAL	.00	.00	.00	.00	.00
	AMERICAN RESCUE PLAN ACT TOTA	.00	.00	.00	.00	.00
	FUTURE STREET PROJECTS TOTAL	977,400.00	.00	.00	.00	977,400.00
	CAPITAL EQUIPMENT FUND TOTAL	385,500.00	552.00	32,846.03	8.52	352,653.97
	WATER TOTAL	.00	.00	.00	.00	.00
	SEWER TOTAL	.00	.00	.00	.00	.00
	LANDFILL/GARBAGE TOTAL	358,000.00	24,470.67	138,182.53	38.60	219,817.47
	STORM WATER TOTAL	625,600.00	50,114.15	238,238.03	38.08	387,361.97
	INTERNAL SERVICE FUND TOTAL	.00	.00	.00	.00	.00
	REVOLVING FUND TOTAL	.00	.00	.00	.00	.00
	TOTAL REVENUE BY FUND	21,737,170.00	584,129.48	5,549,843.40	25.53	16,187,326.60

STAFF REPORT
CITY COUNCIL
January 23, 2025

TO: CITY COUNCIL

FROM: Adam Strait, City Clerk

SUBJECT: Approve Liquor License - Wal-Mart Supercenter #1764 - 1001 73rd St

GENERAL INFORMATION

ATTACHMENTS

1. IA ABD License Application

State of Iowa
Alcoholic Beverages Division

Applicant

NAME OF LEGAL ENTITY	NAME OF BUSINESS(DBA)	BUSINESS
Walmart Inc.	Wal-Mart Supercenter #1764	(515) 274-6224

ADDRESS OF PREMISES	PREMISES SUITE/APT NUMBER	CITY	COUNTY	ZIP
1001 73rd St		Windsor Heights	Polk	50311-0000

MAILING ADDRESS	CITY	STATE	ZIP
702 SW 8th St	Bentonville	Arkansas	72716-0500

Contact Person

NAME	PHONE	EMAIL
Licensing Dept	(479) 360-3604	complic@wal-mart.com

License Information

LICENSE NUMBER	LICENSE/PERMIT TYPE	TERM	STATUS
LE0001002	Class E Retail Alcohol License	12 Month	Submitted to Local Authority

EFFECTIVE DATE	EXPIRATION DATE	LAST DAY OF BUSINESS
Mar 15, 2025	Mar 14, 2026	

SUB-PERMITS

Class E Retail Alcohol License

PRIVILEGES

ALCOHOLIC BEVERAGES DIVISION State of Iowa

State of Iowa
Alcoholic Beverages Division

Status of Business

BUSINESS TYPE

Corporation

Ownership

- **Individual Owners**

NAME	CITY	STATE	ZIP	POSITION	% OF OWNERSHIP	U.S. CITIZEN
Sarah Little	Springdale	Arkansas	72764	Assistant Secretary	0.00	Yes
Emma Waddell	Bentonville	Arkansas	72712	VP, Financial Services Compliance	0.00	Yes
Matthew Allen	Rogers	Arkansas	72758	Assistant Treasurer	0.00	Yes
Carl Doug McMillon	Bentonville	Arkansas	72712	President & CEO	0.00	Yes
Walmart Licensing						
Walmart Licensing						

Insurance Company Information

INSURANCE COMPANY	POLICY EFFECTIVE DATE	POLICY EXPIRATION DATE

State of Iowa
Alcoholic Beverages Division

DRAM CANCEL DATE	OUTDOOR SERVICE EFFECTIVE DATE	OUTDOOR SERVICE EXPIRATION DATE
BOND EFFECTIVE DATE	TEMP TRANSFER EFFECTIVE DATE	TEMP TRANSFER EXPIRATION DATE

STAFF REPORT
CITY COUNCIL
January 23, 2025

TO: CITY COUNCIL

FROM: Adam Strait, City Clerk

SUBJECT: Approve Liquor License - Kum & Go # 4098 - 7229 University Ave

GENERAL INFORMATION

ATTACHMENTS
1. IA ABD License Application

State of Iowa
Alcoholic Beverages Division

Applicant

NAME OF LEGAL ENTITY	NAME OF BUSINESS(DBA)	BUSINESS
Kum & Go LC	Kum & Go # 4098	(515) 274-7793

ADDRESS OF PREMISES	PREMISES SUITE/APT NUMBER	CITY	COUNTY	ZIP
7229 University Ave		Windsor Heights	Polk	50311

MAILING ADDRESS	CITY	STATE	ZIP
1150 Locust St.	Des Moines	Iowa	50309

Contact Person

NAME	PHONE	EMAIL
Jody Deiter	(515) 274-7793	licensing@maverik.com

License Information

LICENSE NUMBER	LICENSE/PERMIT TYPE	TERM	STATUS
LE0002570	Class E Retail Alcohol License	12 Month	Submitted to Local Authority

EFFECTIVE DATE	EXPIRATION DATE	LAST DAY OF BUSINESS
Mar 15, 2025	Mar 14, 2026	

SUB-PERMITS

Class E Retail Alcohol License

PRIVILEGES

ALCOHOLIC BEVERAGES DIVISION State of Iowa

State of Iowa
Alcoholic Beverages Division

Status of Business

BUSINESS TYPE

Limited Liability Company

Ownership

• Individual Owners

NAME	CITY	STATE	ZIP	POSITION	% OF OWNERSHIP	U.S. CITIZEN
Tyler Call	Salt Lake City	Utah	84111	Vice President	0.00	Yes
Tom Schofield	Salt Lake City	Utah	84111	Secretary	0.00	Yes
Crystal Maggelet	Salt Lake City	Utah	84111	President	0.00	Yes
Jody Deiter						

• Companies

COMPANY NAME	FEDERAL ID	CITY	STATE	ZIP	% OF OWNERSHIP
Maverik Palace Acquisition Co. LLC		Salt Lake City	Utah	84111	100.00

Insurance Company Information



State of Iowa

Alcoholic Beverages Division

INSURANCE COMPANY	POLICY EFFECTIVE DATE	POLICY EXPIRATION DATE
DRAM CANCEL DATE	OUTDOOR SERVICE EFFECTIVE DATE	OUTDOOR SERVICE EXPIRATION DATE
BOND EFFECTIVE DATE	TEMP TRANSFER EFFECTIVE DATE	TEMP TRANSFER EXPIRATION DATE

STAFF REPORT
CITY COUNCIL
January 23, 2025

TO: CITY COUNCIL

FROM: Adam Strait, City Clerk

SUBJECT: Approve Liquor License - Sam's Club #6344 - 1101 73rd St

GENERAL INFORMATION

ATTACHMENTS

1. IA ABD License Application

State of Iowa
Alcoholic Beverages Division

Applicant

NAME OF LEGAL ENTITY	NAME OF BUSINESS(DBA)	BUSINESS
Sam's West Inc	Sam's Club #6344	(479) 544-4324

ADDRESS OF PREMISES	PREMISES SUITE/APT NUMBER	CITY	COUNTY	ZIP
1101 73rd St		Windsor Heights	Polk	50311-0000

MAILING ADDRESS	CITY	STATE	ZIP
702 SW 8th St	Bentonville	Arkansas	72716-0500

Contact Person

NAME	PHONE	EMAIL
Scott Stegall	(479) 371-0964	complic@wal-mart.com

License Information

LICENSE NUMBER	LICENSE/PERMIT TYPE	TERM	STATUS
LE0000666	Class E Retail Alcohol License	12 Month	Submitted to Local Authority

EFFECTIVE DATE	EXPIRATION DATE	LAST DAY OF BUSINESS
Mar 13, 2025	Mar 12, 2026	

SUB-PERMITS

Class E Retail Alcohol License

PRIVILEGES

ALCOHOLIC BEVERAGES DIVISION State of Iowa

State of Iowa
Alcoholic Beverages Division

Status of Business

BUSINESS TYPE

Corporation

Ownership

- **Individual Owners**

NAME	CITY	STATE	ZIP	POSITION	% OF OWNERSHIP	U.S. CITIZEN
Sarah Little	Springdale	Arkansas	72764	Assistant Secretary	0.00	Yes
Kathryn McLay	Bentonville	Arkansas	72712	President & CEO	0.00	Yes
Matthew Allen	Rogers	Arkansas	72758	Assistant Treasurer	0.00	Yes
Walmart Licensing						
Walmart Licensing						

Insurance Company Information

INSURANCE COMPANY

POLICY EFFECTIVE DATE

POLICY EXPIRATION DATE

DRAM CANCEL DATE

OUTDOOR SERVICE EFFECTIVE DATE

OUTDOOR SERVICE EXPIRATION DATE

ALCOHOLIC BEVERAGES DIVISION State of Iowa

State of Iowa

Alcoholic Beverages Division

BOND EFFECTIVE DATE	TEMP TRANSFER EFFECTIVE DATE	TEMP TRANSFER EXPIRATION DATE

STAFF REPORT
CITY COUNCIL
January 23, 2025

TO: CITY COUNCIL

FROM: Adam Strait, City Clerk

SUBJECT: Approve Resolution No. 2025-01 - A Resolution Naming City Depositories and Deposit Limits

GENERAL INFORMATION

ATTACHMENTS

1. Resolution No. 2025-01 City Depositories

RESOLUTION NO. 2025-01

A RESOLUTION NAMING CITY DEPOSITORIES AND DEPOSIT LIMITS

WHEREAS, Iowa Code 12C.2 requires that the approval of financial institutions as depositories shall be by written document which shall be entered of record in the minutes of the approving board, and which shall distinctly name each depository approved, and specify the maximum amount which may be kept on deposit in each depository; and

WHEREAS, the City's auditor recommends the naming of depositories be done annually.

NOW THEREFORE BE IT RESOLVED that the City Council of Windsor Heights, Iowa, approves the following list of financial institutions to be depositories of the City of Windsor Heights funds in conformance with all applicable provisions of Iowa Code Chapter 12. The City Clerk and Finance Director are hereby authorized to deposit the City of Windsor Heights funds in amounts not to exceed the maximum approved for each respective financial institution as set out below.

DEPOSITORY NAME	LOCATION OF FINANCIAL INSTITUTE	MAXIMUM BALANCE IN EFFECT UNDER PRIOR RESOLUTION	MAXIMUM BALANCE IN EFFECT UNDER THIS RESOLUTION
Bankers Trust	Windsor Heights, IA		$35,000,000.00
IPAIT	Des Moines, IA		$35,000,000.00

Passed and Approved this 23rd day of January, 2025.

_____
Mike Jones, Mayor

ATTEST:

_____
Adam Strait, City Clerk

STAFF REPORT
CITY COUNCIL
January 23, 2025

TO: CITY COUNCIL

FROM: Adam Strait, City Clerk

SUBJECT: Approve Resolution No. 2025-02 - A Resolution Naming the Des Moines Register as the City's Official Newspaper

GENERAL INFORMATION

ATTACHMENTS

1. Resolution No. 2025-02 Official City Newspaper

RESOLUTION 2025-02

A RESOLUTION NAMING THE DES MOINES REGISTER AS THE CITY'S OFFICIAL NEWSPAPER

WHEREAS, Iowa Code 362.3 requires that publication as required by city code and provided by state law be published in a newspaper published at least once weekly and having general circulation in the city; and

WHEREAS, Windsor Heights has used the Des Moines Register for such purposes in the past.

NOW THEREFORE BE IT RESOLVED, that the City Council of Windsor Heights, Iowa, designates the Des Moines Register as the Official City Newspaper.

Passed and Approved this 23rd day of January, 2025

_____
Mike Jones, Mayor

ATTEST:

_____
Adam Strait, City Clerk

STAFF REPORT
CITY COUNCIL
January 23, 2025

TO: CITY COUNCIL

FROM: Adam Plagge, City Administrator

SUBJECT: Approve Resolution No. 2025-03 - A Resolution Authorizing The City Of Windsor Heights To Submit An Application For Funding From The Federal Surface Transportation Block Grant Set-Aside Program To The Des Moines Area Metropolitan Planning Organization (MPO) For The Partial Funding Of The Construction Of The Windsor Trail Reconstruction And Further Approving The Application Which Obligates The City Of Windsor Heights To Matching Funds For The Construction Of Said Project

GENERAL INFORMATION

This is a reapplication to the Transportation Alternatives Program for $100,000 to resurface .19 miles of trail from Center Street north 1,000 ft. If awarded the grant, the city would be responsible for the estimated $180,000 in estimated cost to complete the project which would be scheduled for 2027-2028.

ATTACHMENTS

1. STBG - 2029 Set-Aside Application
2. TAP Application Questions
3. Resolution No. 2025-03 Submitting TAP

Thanks for filling out STBG - 2029 Set-Aside Application

Here's what was received.

STBG - 2029 Set-Aside Application

Transportation Alternatives Program

Email *

justin.ernst@bolton-menk.com

Project Sponsor *

Windsor Heights

Secondary Sponsor

Contact Person *

Adam Plagge

Phone Number *

515-645-6808

Email Address *

aplagge@windsorheights.org

Project Description

Project Title *

Windsor Trail Reconstruction

Termini Description (i.e. Park Avenue to 19th Street) *

Center Street to the north 1,000 feet

Project Description *

This project will include full reconstruction of an existing trail that is in poor condition. The Clive Greenbelt Trail is over 11 miles of trail that connects multiple communities, which includes the Windsor Trail located in Windsor Heights. The trail in Windsor Heights runs near Wal-Mart, Sam's Club, the DART Bus Stop, multiple businesses and Colby Park. The City has completed a Master Plan for Colby Park that identified a comprehensive revitalization of the community's primary public recreation amenities. The City has completed portions of the multiple phased projects and the Windsor Trail Reconstruction project will complement all of the improvements. These trail improvements will allow a nice break for riders and walkers coming through the park who are utilizing the Windsor Trail as well as the interior trails of the park allowing for safe access.

Total Estimated Project Cost *

280000

Federal Fiscal Year 2029 TAP Request *

100000

Total Funding Secured *

180000

Source of additional funds and local match? *

If the proposed improvement has secured funding, please list the sources and FFY of secured funding.

RUTF, GO Debt

Is this project seeking funding over multiple years? *

- ○ Yes
- ◉ No

Untitled Title

How many consecutive years will funding be requested? *

- ◉ 2 Years
- ○ 3 Years
- ○ 4+ Years

What is the total anticipated TAP funding request over the multiple years? *

100000

Itemized Costs

If the project does not include one of the following activities, please mark "NA" in the box.

Itemized costs: Land Acquisition *

N/A

Itemized costs: Preliminary Engineering Services *

30,000

Itemized costs: Construction Engineering Service *

25,000

Itemized costs: Construction *

225,000

Itemized costs: Other

Project Development Timeline

Please detail the anticipated start date and completion date for the following activities. For example, 9/2024 - 2/2025.

If the project does not include one of the following activities, please mark "NA" in the box.

Design and Planning *

5/2027 - 11/2027

Land Acquisition *

N/A

Utility Relocation *

N/A

Preliminary Engineering Services *

5/2027

Construction Engineering Services *

4/2028 - 7/2028

Construction *

4/2028 - 7/2028

Other

Has your agency previously applied for TAP funds for this project? *

- (●) Yes
- ( ) No

Has this project previously been awarded TAP funds? *

- [ ] Yes
- [x] No

If previously awarded, what is the project's TPMS number? *

0

Does the project require land acquisition? *

- ( ) Yes
- (●) No

Will the project be open to the public? *

- (●) Yes
- ( ) No

Will a user fee be charged? *

- ( ) Yes

- [x] No

Project Type

Project Type *

Trail/Shared-Use Path

Trail Design Elements

What type of trail? *

- [x] Separated Multiuse Trail
- [ ] Sidepath/Shared Use Path

Width of proposed trail? *

10

Pavement material *

- [x] Asphalt
- [ ] Concrete
- [ ] Gravel
- [ ] Pervious Pavers
- [ ] Other:

Pavement material depth in inches? *

6

Sub-base material *

Modified

Sub-base depth in inches? *

6

Project length in miles? *

.19

Is the segment located on an identified regional trail gap in the LRTP? *

- [ ] Yes

- [x] No

Does the trail segment help provide connectivity to the regional trail network?

- [x] Yes
- [ ] No

Additional Questions

Safety

Is the project located along a high crash corridor? *

- [ ] Yes
- [x] No

Untitled Section

Is the project located at a high crash intersection? *

- [ ] Yes
- [x] No

Environmental Sustainability

Does the project incorporate stormwater management practices? *

- [ ] Yes
- [x] No

Environmental Justice

Is the project completely or partially within an environmental justice area? *

- [ ] With 6-7 degrees of disadvantage
- [ ] With 4-5 degrees of disadvantage
- [x] Less than 4 degrees of disadvantage

How does the project benefit an environmental justice area? *

N/A

Multimodal Aspects

Does the project improve connectivity? (between residential and employment, schools, parks and commercial areas)

- [x] Yes
- [ ] No

- [ ] NA

Does the project provide improved access to walking, biking, transit and other micro mobility options? *

- [x] Yes
- [ ] No
- [ ] NA

Untitled Section

How does the project improve multimodal transportation choices? *

This project will bring another safer route for users. This trail connects multiple communities throughout the metro and includes parking/trail access at multiple points to ensure as many users as possible can enjoy the trail. This trail being a 10'wide trail also allows for multimodal transportation, not just exclusive to one mode of transportation. The project will improve the surface of the existing trail, making it more appealing to users.

Untitled Section

Is the need for the project outlined in regional and local plans/projects? *

(MPO Trail Gaps, CONNECT, Tomorrow Plan, Community Plans etc.)

It's within the Cities CIP

Untitled Section

Describe the maintenance plans for this project. *

The City of Windsor Heights is responsible for ongoing maintenance and operations.

If applicable, please describe the status of the facility right-of-way.

(Is fee title held? Are there easements? How many property owners?)

The project is within City property.

The MPO receives federal funding and may not discriminate against anyone on the basis of race, color, or national origin, according to Title VI of the Civil Rights Act of 1964. By applying to receive these funds the applicant is acknowledging that they understand and adhere to the principles of Title VI when performing activities related to the funding they receive from the Des Moines Area Metropolitan Planning Organization. *

- [x] Agree
- [ ] Disagree

To the best of my knowledge all information included in this application is true and accurate, including the commitment of all design features, physical and financial resources. This application has been duly authorized by participating local authority(s). I understand the FORMAL RESOLUTION binds the participating local governments to provide the required matching funds, design features according to

those listed in the application and to assume responsibility for adequate maintenance of any new or improved facilities. I understand that, although this information is sufficient to secure a commitment of funds, an executed contract between the applicant and the Iowa Department of Transportation is required prior to the authorization of funds. *

- (●) Yes
- ( ) No

A GIS shapefile of the project has been emailed to the MPO *

- (●) Yes
- ( ) No

An executed city resolution has been emailed to the MPO *

- (●) Yes
- ( ) No

If proposed project is on an existing or future DART transit line, has a letter of review from DART been emailed to the MPO *

- ( ) Yes
- (●) No

Additional information you would like to share about the project:

Thank you for submitting

Create your own Google Form
Does this form look suspicious? Report

FFY 2029 – Transportation Alternatives Program

1. **Primary Sponsor:** Windsor Heights
2. **Secondary Sponsor:** Windsor Heights
3. **Contact Person:** Adam Plagge
4. **Phone Number:** 515-645-6808
5. **Email Address:** aplagge@windsorheights.org
6. **Project Title:** Windsor Trail Reconstruction
7. **Termini Description:** Center Street to the north 1,000 feet
8. **Project Description:** This project will include full reconstruction of an existing trail that is in poor condition. The Windsor Trail is over 11 miles of trail that connects multiple communities. The trail in Windsor Heights runs near Wal-Mart, Sam's Club, the DART Bus Stop, multiple businesses and Colby Park. The City has completed a Master Plan for Colby Park that identified a comprehensive revitalization of the community's primary public recreation amenities. The City has completed portions of the multiple phased projects and the Windsor Trail Reconstruction project will complement all of the improvements. These trail improvements will allow a nice break for riders and walkers coming through the park who are utilizing the Windsor Trail as well as the interior trails of the park allowing for safe access.
9. **Total Estimated Project Cost**: $280,000
10. **Federal Fiscal Year 2026 TAP Request:** $100,000
11. **Total Funding Secured:** $180,000
12. **Source of Additional Funds and Local Match:** RUTF, GO Debt
13. **Is this project seeking funding over multiple years?** No
14. **How many consecutive years will funding be requested?** N/A
15. **What is the total anticipated TAP funding request over the multiple years?** N/A
16. **Itemized costs: Land Acquisition:** $0
17. **Itemized costs: Preliminary Engineering Services:** $30,000
18. **Itemized costs: Construction Engineering Services**: $25,000
19. **Itemized costs: Construction** $225,000
20. **Itemized costs: Other** $0
21. **Project Development Timeline: Design and Planning:** April – November 2027
22. **Project Development Timeline: Land Acquisition:** N/A
23. **Project Development Timeline: Utility Relocation:** N/A
24. **Project Development Timeline: Preliminary Engineering Services:** May 2027
25. **Project Development Timeline: Construction Engineering Services:** April – July 2028
26. **Project Development Timeline: Construction:** April – July 2028
27. **Project Development Timeline: Other: Project Bidding:** January – February 2027
28. **Has your agency previously applied for TAP funds for this project?** Yes
29. **Has this project previously been awarded TAP funds?** No
30. **If previously awarded, what is the project's TPMS number?** N/A
31. **Does this project require land acquisition?** No
32. **How many acres of land will be acquired?** N/A
33. **Will the project be open to the public?** Yes
34. **Will a user fee be charged?** No
35. **How much of a user fee will be charged?** $0

36. **Project Type:** Trail/Shared-Use Path
37. **What type of trail:** Separated Multiuse Trail
38. **Width of proposed trail:** 10 feet
39. **Pavement:** Asphalt
40. **Pavement material depth in inches:** 4 inches
41. **Sub-base material:** Modified subbase
42. **Sub-base depth in inches:** 6 inches
43. **Project length in miles:** .19
44. **Is the segment located on an identified regional trail gap in the LRTP?** No
45. Does the trail segment help provide connectivity to the regional trail network? Yes
46. What type of bicyle lane: N/A
47. What is the width of the bicycle lane: N/A
48. Project length in miles: N/A
49. Existing bicycle signals: N/A
50. Proposed bicycle signals: N/A
51. Does the on-street bicycle facility help fill a gap in the non-motorized system network?
52. Is the project located within a quarter mile of an elementary school or middle school:
53. How will the project improve the safety of students walking and biking to school:
54. Existing street trees: N/A
55. Proposed street trees: N/A
56. What is the spacing of street trees along the corridor (ft): N/A
57. What variety of tree(s) will be planted: N/A
58. What other landscaping will be incorporated in the project: N/A
59. Will the landscaping adequately manage stormwater: N/A
60. Does the project use traffic calming measures: No
61. Describe how the project uses traffic calming measures: N/A
62. Is the project located along a high crash corridor: N/A
63. Is the project located at a high crash intersection: N/A
64. If located in a high crash area, does the project incorporate any safety countermeasures: N/A
65. What countermeasures have been proposed to address the safety of non-motorized users: N/A
66. Does the project incorporate stormwater management practices: No
67. What stormwater management practices will be utilized: N/A
68. Describe how the project uses these stormwater management practices: N/A
69. Is the project completely or partially within an environmental justice area: None
70. How does the project benefit an environmental justice area: N/A
71. Does the project improve connectivity: No.
72. Does the project provide improved access to walking, biking, transit and other micro mobility options: No
73. How does the project improve multimodal transportation choices: This project will bring another safer route for users. This trail connects multiple communities throughout the metro and includes parking/trail access at multiple points to ensure as many users as possible can enjoy the trail. This trail being a 10'wide trail also allows for multimodal transportation, not just exclusive to one mode of transportation. The project will improve the surface of the existing trail, making it more appealing to users.

74. Is the need for the project outlined in regional and local plans/projects: It's within the Cities CIP.
75. Describe maintenance plans for this project: The City of Windsor Heights is responsible for ongoing maintenance and operations.
76. If applicable, please describe the status of the facility right-of-way: The project is within City property.

Resolution No. 2025-03

A RESOLUTION AUTHORIZING THE CITY OF WINDSOR HEIGHTS TO SUBMIT AN APPLICATION FOR FUNDING FROM THE FEDERAL SURFACE TRANSPORTATION BLOCK GRANT SET-ASIDE PROGRAM TO THE DES MOINES AREA METROPOLITAN PLANNING ORGANIZATION (MPO) FOR THE PARTIAL FUNDING OF THE CONSTRUCTION OF THE WINDSOR TRAIL RECONSTRUCTION AND FURTHER APPROVING THE APPLICATION WHICH OBLIGATES THE CITY OF WINDSOR HEIGHTS TO MATCHING FUNDS FOR THE CONSTRUCTION OF SAID PROJECT

Whereas, the CITY OF WINDSOR HEIGHTS is a full member of the Des Moines Area Metropolitan Planning Organization; and

Whereas, the Federal Surface Transportation Block Grant Program-Aside Program provides funding to local jurisdictions for the construction of eligible projects; and

Whereas, the program is administered by the Des Moines Area Metropolitan Planning Organization which prioritizes and ranks all project applications; and

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF WINDSOR HEIGHTS THAT:

1. The City Council supports and approves the attached application for Federal Surface Transportation Block Grant Set-Aside Program funding.

2. The City Council hereby commits to the City of Windsor Heights matching monies as required by the Federal Surface Transportation Block Grant Set-Aside Program funding.

3. The City of Windsor Heights hereby commits to accepting and maintaining these improvements for a minimum of twenty (20) years following the completion.

4. The City Administrator or designated staff member in his/her absence is hereby authorized to approve and execute the application on behalf of the City Council of Windsor Heights.

Passed and Approved on this 23rd day of January 2025.

_____

Mike Jones, Mayor

_____

Adam Strait, City Clerk

STAFF REPORT
CITY COUNCIL
January 23, 2025

TO: CITY COUNCIL

FROM: Adam Plagge, City Administrator

SUBJECT: Approve Resolution No. 2025-04 - A Resolution Authorizing The City Of Windsor Heights, Iowa To Submit An Application For Funding From The Federal Surface Transportation Block Grant Program (STBG) To The Des Moines Area Metropolitan Planning Organization (MPO) For The Partial Funding Of The Construction Of 73rd Street Phase 1 And Further Approving The Application Which Obligates The City Of Windsor Heights To Matching Funds For The Construction Of Said Project

GENERAL INFORMATION

This is a reapplication to the 2029 STBG Program for $2,000,000 to reconstruct 73rd St. south. Last year the City was awarded $700,000 from STBG. The City is currently working with the MPO on a RAISE Grant application for this project as well, if awarded the RAISE Grant, the City may decline these STBG funds as they may be supplanted by the RAISE Award.

ATTACHMENTS

1. Windsor Heights STBG FFY29 Application- DART Comment letter
2. Application Questions Answers_2025_FINAL
3. Resolution No. 2025-04 - Submitting STBG Application for 73rd Street Phase1

December 30, 2024

Planning and Programming Staff
420 Watson Powell Jr., Way, Suite 200
Des Moines, Iowa 50309

RE: Windsor Heights STBG Application

Dear Funding Committee and MPO staff,

DART has reviewed the below referenced Surface Transportation Block Grant application and has the following comments to share:

73rd St from University Ave. to Center St
DART currently operates Route 3, Route 74 and Route 95 along or across this segment of 73rd St. The project proposes to reconstruct the roadway, which will include improvements to pedestrian crossings and possibly the addition of sidewalks to areas currently lacking them. This area could serve as a vital connection between the multifamily housing south and west of the project to the commercial areas and high frequency transit connections to the north and east of the project. DART supports the project and as it moves further into design is hopeful that the additional sidewalk is feasible in order to make the corridor more pedestrian-friendly and therefore improve access to transit and mobility in general.

DART believes that an integrated and responsive transportation network is essential for the long-term growth of the Des Moines region. Therefore, DART supports the City of Windsor Heights' application for FFY2029 STBG funding. DART appreciates opportunity to comment on this project and the efforts to incorporate safe and accessible pedestrian features into the plans.

Sincerely,

Luis Montoya
Chief Operating and Planning Officer

Des Moines
Area Regional
Transit Authority

620 Cherry Street
Des Moines, Iowa
50309-4530

515-283-8100
Fax 515-283-8135
ridedart.com

FFY 2028 STBG Program Application

1. **Primary Sponsor:** Windsor Heights
2. **Secondary Sponsor:** None
3. **Contact Person:** Adam Plagge
4. **Phone Number:** 515-645-6808
5. **Email Address:** aplagge@windsorheights.org
6. **Project Title:** 73rd Street Reconstruction – Phase 2
7. **Termini Description:** Center Street to University Avenue
8. **Project Description: :** The project encompasses a segment of 73rd Street, extending from University Avenue south to Center Street. It includes an interchange with I-235, a creek crossing, and a rail line owned by Norfolk Southern Railway and operated by Iowa Interstate Railroad. Additionally, the project is adjacent to one of the busiest bus stops in the Des Moines Area Regional Transit Authority's (DART) system.

   73rd Street is a crucial thoroughfare within Windsor Heights, connecting Hickman Road, I-235, and University Avenue. The project also borders the City of Clive and the City of West Des Moines. The City of Windsor Heights has undertaken numerous public engagement initiatives, including displaying project boards at the Windsor Wonderland event attended by 1,500 individuals, placing project boards in frequently visited public areas, and creating a QR code and feedback form on the project website to garner support from roadway users. Based on best practices and the feedback received thus far, the project will incorporate the following components:
   - A new 4-8 foot sidewalk and a concrete barrier in certain areas to ensure pedestrian safety and connectivity.
   - High-visibility crosswalk markings will be added at all intersections.
   - This project aims to rectify the curvature near Buffalo Road and install a raised median at specific locations between the two directions of travel.
   - Railroad crossing arms will be installed on both the shoulder of the road and within the median.
   - The loop ramp connecting 73rd Street southbound to the I-235 eastbound on-ramp will be realigned closer to the intersection of 73rd Street and Center Street at the interchange with I-235.
   - The westbound off-ramp loop will be removed, and vehicles heading to 73rd Street southbound will use the current loop and signal.
   - The traffic signals will be interconnected through fiber optic cables, and an advanced monitoring system will be implemented to detect any signal malfunctions and adjust timings as required to optimize traffic flow.

9. **Total Estimated Project Cost:** $19,550,000
10. **Federal Fiscal Year 2029 STBG Request:** $2,000,000
11. **Total Funding Secured:** $0
12. **Source of additional funds and local match:** RUTF, GO/TIF Debt
13. **Is this project seeking funding over multiple years?** Yes.

14. **How many consecutive years will funding be requested?** 3
15. **What is the total anticipated STBG funding request over the multiple years?** $4,000,000
16. **What is the projects LRTP number (if applicable)?** N/A
17. **Has any part of this project been started or completed?** No
18. **Has your agency previously applied for STBG funds for this project?** Yes
19. **Has this project previously been awarded STBG funds?** Yes
20. **What is the TPMS number?** N/A
21. **The Federal Highway Administration requires STBG funds to be used towards regionally significant projects. Please describe how this project fulfills this requirement.**

    73rd Street is a key thoroughfare connecting metro areas, including University Avenue, 8th Street, and the I-235 interchange. Buffalo Road intersects, linking Clive and West Des Moines. Residents and commuters rely on 73rd Street for activities like shopping, retail needs, employment, recreation, and quality of life. The corridor also provides access to major retailers like Wal-Mart and Sam's Club and businesses in Clive and West Des Moines, including Dowling Catholic High School. Phase 1 reconstructs 73rd Street between University Avenue and Hickman Road, with Phase 2 completing the roadway. West Des Moines recently completed their portion (8th Street) south of Center Street.

22. **Describe how this project impacts other city/county goals, plans, and projects.**

    This project, though situated entirely in Windsor Heights, serves multiple communities by connecting them for daily needs, school, shopping, entertainment, and recreation. The south and west road right-of-way lines border two other communities' boundaries and their commercial properties (City of West Des Moines and City of Clive). The City of Windsor Heights has adopted a Complete Streets policy and this corridor is a key passageway for pedestrians walking and riding bike to Wal-Mart and Sam's Club. These pedestrians are currently forced to utilize 73rd St. or the railroad tracks.

23. **Describe any work previously completed (or underway) that this project complements or is recommended in other planning studies/construction projects**

    This project complements the reconstruction of University Avenue, the 8th Street project (City of West Des Moines), and the current Phase 1 reconstruction of 73rd Street between Hickman Road and University Avenue in Windsor Heights.

24. **Expansion is considered an expensive and last resort to address congestion issues. If this is an expansion project please explain what other methods have been used to address congestion.**

    This project is not an expansion project but hopes to address congestion issues.

25. **Describe how the land-uses adjacent to this project support the development of affordable housing.**

The project is primarily located in a commercial district. It could support redevelopment with mixed use development and other development.

26. **Application Category** Major Reconstruction/Replacement
27. **Project Type:** Improved alignment, Reconstruction, Interchange, Intersection, ITS improvements?
28. **If other, please describe.** Pedestrian safety (sidewalk), Signal Improvements, Rail improvements
29. **Surface Type [Existing]** Asphalt and Portland Cement
30. **Surface Type [Proposed]** Concrete
31. **Number of travel lanes [Existing]** 4
32. **Number of travel lanes [Proposed]** 4
33. **Existing travel lane width (ft)** 11-12 ft
34. **Proposed travel lane width (ft)** 11 ft
35. **Existing total facility width (ft)** 50 – 72 ft
36. **Proposed total facility width (ft)** 61 – 102 ft
37. **Existing posted speed (mph)** 35
38. **Proposed posted speed (mph)** 30
39. **Existing median** Yes
40. **Describe existing median (width, plantings, etc)** 3-5 ft concrete median
41. **Proposed median** Yes
42. **Describe the proposed median (width, plantings, etc)** 3-5 ft raised concrete median
43. **Does the project include any of the following improvements to turning movement? [Left turn lanes]** Yes
44. **Does the project include any of the following improvements to turning movement? [Right turn lanes]** Yes
45. **Does the project include any of the following improvements to turning movement? [Center turn lanes]** No
46. **Does the project include any of the following improvements to turning movement? [Turning signals]** Yes
47. **Does the project include any of the following improvements to turning movement? [Extending turn lanes]** Yes
48. **Does the project include any of the following improvements to turning movement? [Roundabouts]** No
49. **Existing paved shoulders?** No
50. **Proposed paved shoulders?** No
51. **Existing curb radius at intersections?** 20
52. **Proposed curb radius at intersections?** 30
53. **Existing signal interconnection?** No
54. **Does project include improvements to signal interconnection?** Yes
55. **Existing number of access points along project length?** 8
56. **Proposed number of access points along project length?** 8
57. **Existing sidewalk width?** 4 ft
58. **Proposed sidewalk width?** 4-8 ft
59. **Number of existing pedestrian benches?** 0
60. **Number of proposed pedestrian benches?** 1

Formatted: Not Highlight

61. **Existing curb extensions?** No
62. **Proposed curb extensions?** No
63. **Existing crosswalks?** Yes
64. **Do current crosswalks have a raised pedestrian refuge?** No
65. **Proposed crosswalks?** Yes
66. **Do proposed crosswalks have a raised pedestrian refuge?** No.
67. **Number of existing bus shelters?** 0
68. **Is there an existing paved connection between sidewalk and bus shelter?** N/A
69. **Number of proposed bus shelters?** 0
70. **Is there a proposed paved connection between sidewalk and bus shelters?** N/A
71. **Number of existing on-street parking spots?** 0
72. **Number of proposed on-street parking spots?** 0
73. **How many electric vehicle charging stations does this project include?** 0
74. **Existing bicycle facility?** Yes
75. **Existing bicycle facility type?** Dedicated Facility (shared-use path, like lane, buffered/protected bike lane)
76. **Existing bicycle facility width?** 8 ft
77. **Proposed bicycle facility?** Yes
78. **What type of bicycle facility?** Dedicated Facility (shared-use path, like lane, buffered/protected bike lane)
79. **What is the width of the bicycle facility?** 10 ft
80. **Existing bicycle signals?** No
81. **Proposed bicycle signals?** No
82. **Existing pedestrian signals?** Yes
83. **Proposed pedestrian signals?** Yes
84. **Existing street trees?** No
85. **Proposed street trees?** Yes
86. **What variety of tree(s) will be planted?** Princeton Elm, Honey Locust, Autumn Gold Ginkgo
87. **What is the spacing of street trees along the corridor (ft)?** 100
88. **If the project has additional landscaping, please describe.** N/A
89. **Does the project improve a parallel facility or contribute to alternative routing?** Yes
90. **Describe how the project improves a parallel facility or contributes to alternative routing?**

- 63rd Street (Hwy 28) runs parallel to the east side of Windsor Heights. Enhancing 73rd Street may reduce traffic congestion on 63rd Street.

91. **Does the project use green infrastructure to manage 1 1/4 inches of rainfall?** Yes
92. **Describe how the project uses green infrastructure to manage 1 1/4 inches of rainfall?** It will be difficult to treat the entire project, but certain portions can be managed with bioretention cells and/or tree wells within the right-of-way.
93. **Does the project use traffic calming measures?** Yes
94. **Describe how the project uses traffic calming measures?** Narrower travel lanes will be used along with a reduced speed limit. Street trees will also be installed.
95. **What are the traffic counts on the segment where the project is located?** 10,000 + AADT
96. **When was the traffic study conducted and what were the traffic counts?** 2016-2018

Formatted: Not Highlight

Formatted: Not Highlight

Formatted: Not Highlight

97. **Does project cross a bridge?** Yes
98. **Is the bridge included on Iowa DOT's structurally deficient list?** No
99. **What is the structural rating of the bridge, 1-100?** 84.8
100. **Will the project include the replacement or reconstruction of the bridge?** No
101. **Are any of the following elements included in this project (Right-of-way Acquisition, Utility Relocation, Excavation of more than 3 feet below ground level, Traffic Signal Infrastructure, Light Poles, None of these?**
Right-of-way Acquisition, Utility Relocation, Excavation of more than 3 feet below ground level, Traffic signal infrastructure.
102. **Does the project include digital infrastructure elements that serve a transportation or mobility-related function?** No
103. **Will the project affect digital infrastructure in the vicinity of any institutional uses or public facilities in your jurisdiction? Check all that apply (Police or Fire Station, School, Library, Recreation Center, Government Offices, Maintenance Facility, None, Other):** No.
104. **Does this project affect or touch another jurisdiction or agency?** Yes.
105. **Were cross jurisdictional digital connections considered?** No.
106. **Does this project include engagement with DART relating to improvements to digital infrastructure that will benefit transit service?** No.
107. **Will the digital infrastructure systems associated with this project be interoperable with other such systems serving public infrastructure in the region?** No
108. **Does the project add or upgrade any of the following digital infrastructure? (Coax, Fiber, Conduit, Duct Bank, Pull Boxes, Other, None)** No.
109. **Intelligent Transportation System (ITS) are technologies that advance transportation safety and mobility and enhance productivity by integrating advanced communications technologies into transportation infrastructure and modes of travel. Please describe any ITS elements of this project.** Yes. Proposed improvements include the connection of the signals to the an existing fiber optic infrastructure and utilize a traffic management system, like the McCain Transparity TMS

110. **Please describe the overall operations and maintenance plan for this project. What agency will be responsible for ongoing maintenance and operations of the infrastructure, including digital infrastructure, and how will this be budgeted? If the project sponsor is not responsible for maintenance/operations after the project ends, please indicate responsible agency name and the status of any maintenance/operations agreements.**

The City of Windsor Heights is responsible for ongoing maintenance and operations.

111. **The MPO receives federal funding and may not discriminate against anyone on the basis of race, color, or national origin, according to Title VI of the Civil Rights Act of 1964. By applying to receive these funds the applicant is acknowledging that they understand and adhere to the principles of Title VI when performing activities related to the funding they receive from the Des Moines Area Metropolitan Planning Organization.** Agree

112. To the best of my knowledge all information included in this application is true and accurate, including the commitment of all design features, physical and financial resources. This application has been duly authorized by participating local authority(s). I understand the FORMAL RESOLUTION binds the participating local governments to provide the required matching funds, design features according to those listed in the application and to assume responsibility for adequate maintenance of any new or improved facilities. I understand that, although this information is sufficient to secure a commitment of funds, an executed contract between the applicant and the Iowa Department of Transportation is required prior to the authorization of funds. Agree

113. A GIS shapefile has been sent to the MPO Yes

114. **An executed city resolution has been emailed to the MPO** Yes.

115. If proposed project is on an existing or future DART transit line, has a letter of review from DART been emailed to the MPO Yes.

116. Additional information you would like to share?

FFY 2029 STBG Program Application

1. **Primary Sponsor:** Windsor Heights
2. **Secondary Sponsor:** None
3. **Contact Person:** Adam Plagge
4. **Phone Number:** 515-645-6808
5. **Email Address:** aplagge@windsorheights.org
6. **Project Title:** 73rd Street Reconstruction – Phase 2
7. **Termini Description:** Center Street to University Avenue
8. **Project Description: :** The project encompasses a segment of 73rd Street, extending from University Avenue south to Center Street. It includes an interchange with I-235, a creek crossing, and a rail line owned by Norfolk Southern Railway and operated by Iowa Interstate Railroad. Additionally, the project is adjacent to one of the busiest bus stops in the Des Moines Area Regional Transit Authority's (DART) system.

   73rd Street is a crucial thoroughfare within Windsor Heights, connecting Hickman Road, I-235, and University Avenue. The project also borders the City of Clive and the City of West Des Moines. The City of Windsor Heights has undertaken numerous public engagement initiatives, including displaying project boards at the Windsor Wonderland event attended by 1,500 individuals, placing project boards in frequently visited public areas, and creating a QR code and feedback form on the project website to garner support from roadway users. Based on best practices and the feedback received thus far, the project will incorporate the following components:
   - A new 4-8 foot sidewalk and a concrete barrier in certain areas to ensure pedestrian safety and connectivity.
   - High-visibility crosswalk markings will be added at all intersections.
   - This project aims to rectify the curvature near Buffalo Road and install a raised median at specific locations between the two directions of travel.
   - Railroad crossing arms will be installed on both the shoulder of the road and within the median.
   - The loop ramp connecting 73rd Street southbound to the I-235 eastbound on-ramp will be realigned closer to the intersection of 73rd Street and Center Street at the interchange with I-235.
   - The westbound off-ramp loop will be removed, and vehicles heading to 73rd Street southbound will use the current loop and signal.
   - The traffic signals will be interconnected through fiber optic cables, and an advanced monitoring system will be implemented to detect any signal malfunctions and adjust timings as required to optimize traffic flow.

9. **Total Estimated Project Cost:** $19,550,000
10. **Federal Fiscal Year 2029 STBG Request:** $2,000,000
11. **Total Funding Secured:** $0
12. **Source of additional funds and local match:** RUTF, GO/TIF Debt
13. **Is this project seeking funding over multiple years?** Yes.

14. **How many consecutive years will funding be requested?** 3
15. **What is the total anticipated STBG funding request over the multiple years?** $4,000,000
16. **What is the projects LRTP number (if applicable)?** N/A
17. **Has any part of this project been started or completed?** No
18. **Has your agency previously applied for STBG funds for this project?** Yes
19. **Has this project previously been awarded STBG funds?** Yes
20. **What is the TPMS number?** N/A
21. **The Federal Highway Administration requires STBG funds to be used towards regionally significant projects. Please describe how this project fulfills this requirement.**

    73rd Street is a key thoroughfare connecting metro areas, including University Avenue, 8th Street, and the I-235 interchange. Buffalo Road intersects, linking Clive and West Des Moines. Residents and commuters rely on 73rd Street for activities like shopping, retail needs, employment, recreation, and quality of life. The corridor also provides access to major retailers like Wal-Mart and Sam's Club and businesses in Clive and West Des Moines, including Dowling Catholic High School. Phase 1 reconstructs 73rd Street between University Avenue and Hickman Road, with Phase 2 completing the roadway. West Des Moines recently completed their portion (8th Street) south of Center Street.

22. **Describe how this project impacts other city/county goals, plans, and projects.**

    This project, though situated entirely in Windsor Heights, serves multiple communities by connecting them for daily needs, school, shopping, entertainment, and recreation. The south and west road right-of-way lines border two other communities' boundaries and their commercial properties (City of West Des Moines and City of Clive). The City of Windsor Heights has adopted a Complete Streets policy and this corridor is a key passageway for pedestrians walking and riding bike to Wal-Mart and Sam's Club. These pedestrians are currently forced to utilize 73rd St. or the railroad tracks.

23. **Describe any work previously completed (or underway) that this project complements or is recommended in other planning studies/construction projects**

    This project complements the reconstruction of University Avenue, the 8th Street project (City of West Des Moines), and the current Phase 1 reconstruction of 73rd Street between Hickman Road and University Avenue in Windsor Heights.

24. **Expansion is considered an expensive and last resort to address congestion issues. If this is an expansion project please explain what other methods have been used to address congestion.**

    This project is not an expansion project but hopes to address congestion issues.

25. **Describe how the land-uses adjacent to this project support the development of affordable housing.**

The project is primarily located in a commercial district. It could support redevelopment with mixed use development and other development.

26. **Application Category** Major Reconstruction/Replacement
27. **Project Type:** Improved alignment, Reconstruction, Interchange, Intersection, ITS improvements?
28. **If other, please describe.** Pedestrian safety (sidewalk), Signal Improvements, Rail improvements
29. **Surface Type [Existing]** Asphalt and Portland Cement
30. **Surface Type [Proposed]** Concrete
31. **Number of travel lanes [Existing]** 4
32. **Number of travel lanes [Proposed]** 4
33. **Existing travel lane width (ft)** 11-12 ft
34. **Proposed travel lane width (ft)** 11 ft
35. **Existing total facility width (ft)** 50 – 72 ft
36. **Proposed total facility width (ft)** 61 – 102 ft
37. **Existing posted speed (mph)** 35
38. **Proposed posted speed (mph)** 30
39. **Existing median** Yes
40. **Describe existing median (width, plantings, etc)** 3-5 ft concrete median
41. **Proposed median** Yes
42. **Describe the proposed median (width, plantings, etc)** 3-5 ft raised concrete median
43. **Does the project include any of the following improvements to turning movement? [Left turn lanes]** Yes
44. **Does the project include any of the following improvements to turning movement? [Right turn lanes]** Yes
45. **Does the project include any of the following improvements to turning movement? [Center turn lanes]** No
46. **Does the project include any of the following improvements to turning movement? [Turning signals]** Yes
47. **Does the project include any of the following improvements to turning movement? [Extending turn lanes]** Yes
48. **Does the project include any of the following improvements to turning movement? [Roundabouts]** No
49. **Existing paved shoulders?** No
50. **Proposed paved shoulders?** No
51. **Existing curb radius at intersections?** 20
52. **Proposed curb radius at intersections?** 30
53. **Existing signal interconnection?** No
54. **Does project include improvements to signal interconnection?** Yes
55. **Existing number of access points along project length?** 8
56. **Proposed number of access points along project length?** 8
57. **Existing sidewalk width?** 4 ft
58. **Proposed sidewalk width?** 4-8 ft
59. **Number of existing pedestrian benches?** 0
60. **Number of proposed pedestrian benches?** 1

Formatted: Not Highlight

61. **Existing curb extensions?** No
62. **Proposed curb extensions?** No
63. **Existing crosswalks?** Yes
64. **Do current crosswalks have a raised pedestrian refuge?** No
65. **Proposed crosswalks?** Yes
66. **Do proposed crosswalks have a raised pedestrian refuge?** No.
67. **Number of existing bus shelters?** 0
68. **Is there an existing paved connection between sidewalk and bus shelter?** N/A
69. **Number of proposed bus shelters?** 0
70. **Is there a proposed paved connection between sidewalk and bus shelters?** N/A
71. **Number of existing on-street parking spots?** 0
72. **Number of proposed on-street parking spots?** 0
73. **How many electric vehicle charging stations does this project include?** 0
74. **Existing bicycle facility?** Yes
75. **Existing bicycle facility type?** Dedicated Facility (shared-use path, like lane, buffered/protected bike lane)
76. **Existing bicycle facility width?** 8 ft
77. **Proposed bicycle facility?** Yes
78. **What type of bicycle facility?** Dedicated Facility (shared-use path, like lane, buffered/protected bike lane)
79. **What is the width of the bicycle facility?** 10 ft
80. **Existing bicycle signals?** No
81. **Proposed bicycle signals?** No
82. **Existing pedestrian signals?** Yes
83. **Proposed pedestrian signals?** Yes
84. **Existing street trees?** No
85. **Proposed street trees?** Yes
86. **What variety of tree(s) will be planted?** Princeton Elm, Honey Locust, Autumn Gold Ginkgo
87. **What is the spacing of street trees along the corridor (ft)?** 100
88. **If the project has additional landscaping, please describe.** N/A
89. **Does the project improve a parallel facility or contribute to alternative routing?** Yes
90. **Describe how the project improves a parallel facility or contributes to alternative routing?**

- 63rd Street (Hwy 28) runs parallel to the east side of Windsor Heights. Enhancing 73rd Street may reduce traffic congestion on 63rd Street.

91. **Does the project use green infrastructure to manage 1 1/4 inches of rainfall?** Yes
92. **Describe how the project uses green infrastructure to manage 1 1/4 inches of rainfall?** It will be difficult to treat the entire project, but certain portions can be managed with bioretention cells and/or tree wells within the right-of-way.
93. **Does the project use traffic calming measures?** Yes
94. **Describe how the project uses traffic calming measures?** Narrower travel lanes will be used along with a reduced speed limit. Street trees will also be installed.
95. **What are the traffic counts on the segment where the project is located?** 10,000 + AADT
96. **When was the traffic study conducted and what were the traffic counts?** 2016-2018

Formatted: Not Highlight

Formatted: Not Highlight

Formatted: Not Highlight

97. **Does project cross a bridge?** Yes
98. **Is the bridge included on Iowa DOT's structurally deficient list?** No
99. **What is the structural rating of the bridge, 1-100?** 84.8
100. **Will the project include the replacement or reconstruction of the bridge?** No
101. **Are any of the following elements included in this project (Right-of-way Acquisition, Utility Relocation, Excavation of more than 3 feet below ground level, Traffic Signal Infrastructure, Light Poles, None of these?**
Right-of-way Acquisition, Utility Relocation, Excavation of more than 3 feet below ground level, Traffic signal infrastructure.
102. **Does the project include digital infrastructure elements that serve a transportation or mobility-related function?** No
103. **Will the project affect digital infrastructure in the vicinity of any institutional uses or public facilities in your jurisdiction? Check all that apply (Police or Fire Station, School, Library, Recreation Center, Government Offices, Maintenance Facility, None, Other):** No.
104. **Does this project affect or touch another jurisdiction or agency?** Yes.
105. **Were cross jurisdictional digital connections considered?** No.
106. **Does this project include engagement with DART relating to improvements to digital infrastructure that will benefit transit service?** No.
107. **Will the digital infrastructure systems associated with this project be interoperable with other such systems serving public infrastructure in the region?** No
108. **Does the project add or upgrade any of the following digital infrastructure? (Coax, Fiber, Conduit, Duct Bank, Pull Boxes, Other, None)** No.
109. **Intelligent Transportation System (ITS) are technologies that advance transportation safety and mobility and enhance productivity by integrating advanced communications technologies into transportation infrastructure and modes of travel. Please describe any ITS elements of this project.** Yes. Proposed improvements include the connection of the signals to the an existing fiber optic infrastructure and utilize a traffic management system, like the McCain Transparity TMS

110. **Please describe the overall operations and maintenance plan for this project. What agency will be responsible for ongoing maintenance and operations of the infrastructure, including digital infrastructure, and how will this be budgeted? If the project sponsor is not responsible for maintenance/operations after the project ends, please indicate responsible agency name and the status of any maintenance/operations agreements.**

The City of Windsor Heights is responsible for ongoing maintenance and operations.

111. **The MPO receives federal funding and may not discriminate against anyone on the basis of race, color, or national origin, according to Title VI of the Civil Rights Act of 1964. By applying to receive these funds the applicant is acknowledging that they understand and adhere to the principles of Title VI when performing activities related to the funding they receive from the Des Moines Area Metropolitan Planning Organization.** Agree

112. To the best of my knowledge all information included in this application is true and accurate, including the commitment of all design features, physical and financial resources. This application has been duly authorized by participating local authority(s). I understand the FORMAL RESOLUTION binds the participating local governments to provide the required matching funds, design features according to those listed in the application and to assume responsibility for adequate maintenance of any new or improved facilities. I understand that, although this information is sufficient to secure a commitment of funds, an executed contract between the applicant and the Iowa Department of Transportation is required prior to the authorization of funds. Agree

113. A GIS shapefile has been sent to the MPO Yes

114. **An executed city resolution has been emailed to the MPO** Yes.

115. If proposed project is on an existing or future DART transit line, has a letter of review from DART been emailed to the MPO Yes.

116. Additional information you would like to share?

RESOLUTION NO. 2025-04

A RESOLUTION AUTHORIZING THE CITY OF WINDSOR HEIGHTS, IOWA TO SUBMIT AN APPLICATION FOR FUNDING FROM THE FEDERAL SURFACE TRANSPORTATION BLOCK GRANT PROGRAM (STBG) TO THE DES MOINES AREA METROPOLITAN PLANNING ORGANIZATION (MPO) FOR THE PARTIAL FUNDING OF THE CONSTRUCTION OF 73RD STREET PHASE 1 AND FURTHER APPROVING THE APPLICATION WHICH OBLIGATES THE CITY OF WINDSOR HEIGHTS TO MATCHING FUNDS FOR THE CONSTRUCTION OF SAID PROJECT

WHEREAS, the City of Windsor Heights, Iowa is a full member of the Des Moines Area Metropolitan Planning Organization; and

WHEREAS, the Federal Surface Transportation Block Grant Program provides funding to local jurisdictions for the construction of eligible projects; and

WHEREAS, the program is administered by the Des Moines Area Metropolitan Planning Organization which prioritizes and ranks all project applications.

NOW, THEREFORE BE IT HEREBY RESOLVED BY THE CITY COUNCIL OF THE CITY OF WINDSOR HEIGHTS, IOWA THAT:

1. The City Council supports and approves the attached application for Federal Surface Transportation Program funding.

2. The City Council hereby commits the City of Windsor Heights to matching monies as required by the Federal Surface Transportation Program funding.

3. The City of Windsor Heights hereby commits to accepting and maintaining these improvements for a minimum of twenty (20) years following the completion.

4. The Mayor and City Clerk are hereby authorized to approve and execute the application on behalf of the City of Windsor Heights.

Passed and approved this 23rd day of January 2025.

_____
Mike Jones, Mayor

ATTEST:

_____
Adam Strait, City Clerk

STAFF REPORT
CITY COUNCIL
January 23, 2025

TO: CITY COUNCIL

FROM: Justin Ernst, City Engineer

SUBJECT: Approve 73rd Street Phase 1 STP-U-8477(615)—70-77 Pay Request 8

GENERAL INFORMATION

ATTACHMENTS

1. LTR-73rd Street-Pay App 8
2. payment_8_20250102

BOLTON & MENK
Real People. Real Solutions.

430 E Grand Avenue
Suite 101
Des Moines, IA 50309

Ph: (515) 259-9190
Fax: (515) 233-4430
Bolton-Menk.com

January 9, 2025

Mr. Adam Plagge
City Administrator
City of Windsor Heights, Iowa

RE: 73rd Street Phase 1
STP-U-8477(615)—70-77
Pay Request 8

Dear Mr. Plagge:

Submitted for your approval is Pay Request 8 for the above-mentioned project. Pay Request 8 is for a total payment of $249,971.00. The total value completed to date is $1,951,713.17 minus the retainage of $30,000. Please see Pay Request 8 for a full summary of the items completed that are included in this payment.

Bolton & Menk, Inc., recommends the approval of Pay Application 8. Upon approval of Pay Request 8, City Clerk or City Administrator to electronically sign in DocExpress and mail payment to the Absolute Concrete Construction, Inc.

Please let me know if you have any questions.

Sincerely,

Bolton & Menk, Inc.

Justin Ernst, PE
Principal Engineer

City of Windsor Heights - Iowa

Detailed Payment

77-8477-615

Description	STP-U-8477(615)--70-77, Letting Date- March 19, 2024 73rd st Phase 1
Payment Number	8
Pay Period	12/01/2024 to 12/31/2024
Prime Contractor	ABSOLUTE CONCRETE CONSTRUCTION, INC.
Payment Status	Pending
Awarded Project Amount	$6,739,027.05
Authorized Amount	$6,844,587.95

Line Number	Item ID	Unit	Unit Price	Authorized Quantity	Current Paid Quantity	Previous Paid Quantity	Total Quantity Paid To Date	Total Quantity Placed To Date	Current Payment Amount	Total Amount Paid To Date
Section: 0001 - STP-U-8477(615)--70-77, Roadway Items - Division 1										
0010	2101-0850002	UNIT	$440.000	22.300	0.000	58.000	58.000	58.000	$0.00	$25,520.00
CLEARING AND GRUBBING										
0020	2102-0425071	CY	$50.000	50.000	0.000	234.000	234.000	234.000	$0.00	$11,700.00
SPECIAL BACKFILL										
0030	2102-2710070	CY	$15.000	10,333.000	0.000	3,444.334	3,444.334	3,444.334	$0.00	$51,665.01
EXCAVATION, CLASS 10, ROADWAY AND BORROW										

Line Number	Item ID	Unit	Unit Price	Authorized Quantity	Current Paid Quantity	Previous Paid Quantity	Total Quantity Paid To Date	Total Quantity Placed To Date	Current Payment Amount	Total Amount Paid To Date
0040	2102-2710080	CY	$15.000	165.000	0.000	234.000	234.000	234.000	$0.00	$3,510.00
EXCAVATION, CLASS 10, UNSUITABLE OR UNSTABLE MATERIAL										
0050	2105-8425015	CY	$8.000	2,124.000	0.000	354.000	354.000	354.000	$0.00	$2,832.00
TOPSOIL, STRIP, SALVAGE AND SPREAD										
0060	2109-8225100	STA	$1,000.000	53.600	0.000	6.750	6.750	6.750	$0.00	$6,750.00
SPECIAL COMPACTION OF SUBGRADE										
0070	2113-0001100	SY	$5.000	5,000.000	0.000	0.000	0.000	0.000	$0.00	$0.00
SUBGRADE STABILIZATION MATERIAL, POLYMER GRID										
0080	2115-0100000	CY	$60.000	4,035.000	0.000	1,013.900	1,013.900	1,013.900	$0.00	$60,834.00
MODIFIED SUBBASE										
0090	2115-0100000	CY	$60.000	181.000	0.000	0.000	0.000	0.000	$0.00	$0.00
MODIFIED SUBBASE: , TRAIL										
0100	2123-7450020	STA	$150.000	81.700	10.879	12.621	23.500	23.500	$1,631.85	$3,525.00
SHOULDER FINISHING, EARTH										
0110	2301-1033080	SY	$75.000	19,678.000	2,385.963	2,519.817	4,905.780	4,905.780	$178,947.22	$367,933.50
STANDARD OR SLIP FORM PORTLAND CEMENT CONCRETE PAVEMENT, CLASS C, CLASS 3 DURABILITY, 8 IN.										
0120	2301-6911722	LS	$10,000.000	1.000	0.000	0.000	0.000	0.000	$0.00	$0.00
PORTLAND CEMENT CONCRETE PAVEMENT SAMPLES										
0130	2304-0101000	SY	$60.000	1,500.000	71.750	0.000	71.750	71.750	$4,305.00	$4,305.00
TEMPORARY PAVEMENT										

Line Number	Item ID	Unit	Unit Price	Authorized Quantity	Current Paid Quantity	Previous Paid Quantity	Total Quantity Paid To Date	Total Quantity Placed To Date	Current Payment Amount	Total Amount Paid To Date
0140	2312-8260051	TON	$40.000	500.000	0.000	60.250	60.250	60.250	$0.00	$2,410.00
GRANULAR SURFACING ON ROAD, CLASS A CRUSHED STONE										
0150	2435-0140148	EACH	$5,500.000	6.000	0.000	1.000	1.000	1.000	$0.00	$5,500.00
MANHOLE, STORM SEWER, SW-401, 48 IN.										
0160	2435-0140160	EACH	$7,800.000	7.000	0.000	4.000	4.000	4.000	$0.00	$31,200.00
MANHOLE, STORM SEWER, SW-401, 60 IN.										
0170	2435-0140172	EACH	$10,000.000	1.000	0.000	0.000	0.000	0.000	$0.00	$0.00
MANHOLE, STORM SEWER, SW-401, 72 IN.										
0180	2435-0140196	EACH	$17,000.000	1.000	0.000	0.000	0.000	0.000	$0.00	$0.00
MANHOLE, STORM SEWER, SW-401, 96 IN.										
0190	2435-0250500	EACH	$5,600.000	34.000	0.000	9.000	9.000	9.000	$0.00	$50,400.00
INTAKE, SW-505										
0200	2435-0250600	EACH	$12,000.000	17.000	0.000	8.000	8.000	8.000	$0.00	$96,000.00
INTAKE, SW-506										
0210	2435-0250900	EACH	$7,300.000	1.000	0.000	0.000	0.000	0.000	$0.00	$0.00
INTAKE, SW-509										
0220	2435-0251000	EACH	$8,500.000	3.000	0.000	0.000	0.000	0.000	$0.00	$0.00
INTAKE, SW-510										
0230	2435-0251230	EACH	$4,100.000	1.000	0.000	1.000	1.000	1.000	$0.00	$4,100.00
INTAKE, SW-512, 30 IN.										

Line Number	Item ID	Unit	Unit Price	Authorized Quantity	Current Paid Quantity	Previous Paid Quantity	Total Quantity Paid To Date	Total Quantity Placed To Date	Current Payment Amount	Total Amount Paid To Date
0240	2435-0251236	EACH	$4,800.000	1.000	0.000	0.000	0.000	0.000	$0.00	$0.00
INTAKE, SW-512, 36 IN.										
0250	2435-0600010	EACH	$2,300.000	33.000	0.000	10.000	10.000	10.000	$0.00	$23,000.00
MANHOLE ADJUSTMENT, MINOR										
0260	2435-0600020	EACH	$6,000.000	1.000	0.000	0.000	0.000	0.000	$0.00	$0.00
MANHOLE ADJUSTMENT, MAJOR										
0270	2435-0600110	EACH	$1,800.000	2.000	0.000	1.000	1.000	1.000	$0.00	$1,800.00
INTAKE ADJUSTMENT, MINOR										
0280	2435-0600120	EACH	$7,500.000	1.000	0.000	0.000	0.000	0.000	$0.00	$0.00
INTAKE ADJUSTMENT, MAJOR										
0290	2435-0700010	EACH	$3,700.000	2.000	0.000	0.000	0.000	0.000	$0.00	$0.00
CONNECTION TO EXISTING MANHOLE										
0300	2502-8212206	LF	$22.000	5,105.000	502.200	724.700	1,226.900	1,226.900	$11,048.40	$26,991.80
SUBDRAIN, PERFORATED PLASTIC PIPE, 6 IN. DIA.										
0310	2502-8221006	EACH	$800.000	17.000	0.000	0.000	0.000	0.000	$0.00	$0.00
SUBDRAIN RISER, 6 IN., AS PER PLAN										
0320	2502-8221303	EACH	$400.000	17.000	3.000	2.000	5.000	5.000	$1,200.00	$2,000.00
SUBDRAIN OUTLET, DR-303										
0330	2503-0114212	LF	$200.000	8.000	0.000	0.000	0.000	0.000	$0.00	$0.00
STORM SEWER GRAVITY MAIN, TRENCHED, REINFORCED CONCRETE PIPE (RCP), 2000D (CLASS III), 12 IN.										

Line Number	Item ID	Unit	Unit Price	Authorized Quantity	Current Paid Quantity	Previous Paid Quantity	Total Quantity Paid To Date	Total Quantity Placed To Date	Current Payment Amount	Total Amount Paid To Date
0340	2503-0114215	LF	$80.000	991.000	0.000	272.000	272.000	272.000	$0.00	$21,760.00
STORM SEWER GRAVITY MAIN, TRENCHED, REINFORCED CONCRETE PIPE (RCP), 2000D (CLASS III), 15 IN.										
0350	2503-0114218	LF	$85.000	778.000	0.000	27.000	27.000	27.000	$0.00	$2,295.00
STORM SEWER GRAVITY MAIN, TRENCHED, REINFORCED CONCRETE PIPE (RCP), 2000D (CLASS III), 18 IN.										
0360	2503-0114224	LF	$110.000	2,556.000	0.000	616.000	616.000	616.000	$0.00	$67,760.00
STORM SEWER GRAVITY MAIN, TRENCHED, REINFORCED CONCRETE PIPE (RCP), 2000D (CLASS III), 24 IN.										
0370	2503-0114230	LF	$130.000	543.000	0.000	416.000	416.000	416.000	$0.00	$54,080.00
STORM SEWER GRAVITY MAIN, TRENCHED, REINFORCED CONCRETE PIPE (RCP), 2000D (CLASS III), 30 IN.										
0380	2503-0114236	LF	$170.000	144.000	0.000	33.000	33.000	33.000	$0.00	$5,610.00
STORM SEWER GRAVITY MAIN, TRENCHED, REINFORCED CONCRETE PIPE (RCP), 2000D (CLASS III), 36 IN.										
0390	2503-0114248	LF	$450.000	8.000	0.000	0.000	0.000	0.000	$0.00	$0.00
STORM SEWER GRAVITY MAIN, TRENCHED, REINFORCED CONCRETE PIPE (RCP), 2000D (CLASS III), 48 IN.										
0400	2503-0114254	LF	$610.000	8.000	0.000	0.000	0.000	0.000	$0.00	$0.00
STORM SEWER GRAVITY MAIN, TRENCHED, REINFORCED CONCRETE PIPE (RCP), 2000D (CLASS III), 54 IN.										
0410	2503-0114266	LF	$850.000	8.000	0.000	0.000	0.000	0.000	$0.00	$0.00
STORM SEWER GRAVITY MAIN, TRENCHED, REINFORCED CONCRETE PIPE (RCP), 2000D (CLASS III), 66 IN.										
0420	2503-0200036	LF	$25.000	3,335.000	0.000	755.400	755.400	755.400	$0.00	$18,885.00
REMOVE STORM SEWER PIPE LESS THAN OR EQUAL TO 36 IN.										
0430	2503-0200136	LF	$45.000	79.000	0.000	38.000	38.000	38.000	$0.00	$1,710.00
REMOVE STORM SEWER PIPE GREATER THAN 36 IN.										

Line Number	Item ID	Unit	Unit Price	Authorized Quantity	Current Paid Quantity	Previous Paid Quantity	Total Quantity Paid To Date	Total Quantity Placed To Date	Current Payment Amount	Total Amount Paid To Date
0440	2504-0200404	LF	$130.000	160.000	0.000	0.000	0.000	0.000	$0.00	$0.00
SANITARY SEWER SERVICE STUB, POLYVINYL CHLORIDE PIPE (PVC), 4 IN.										
0450	2510-6745850	SY	$10.000	17,965.000	0.000	4,630.490	4,630.490	4,630.490	$0.00	$46,304.90
REMOVAL OF PAVEMENT										
0460	2510-6750600	EACH	$900.000	50.000	0.000	20.000	20.000	20.000	$0.00	$18,000.00
REMOVAL OF INTAKES AND UTILITY ACCESSES										
0470	2511-0300000	SY	$10.000	550.000	0.000	0.000	0.000	0.000	$0.00	$0.00
REMOVAL OF RECREATIONAL TRAIL										
0480	2511-0302600	SY	$49.000	715.000	0.000	0.000	0.000	0.000	$0.00	$0.00
RECREATIONAL TRAIL, PORTLAND CEMENT CONCRETE, 6 IN.										
0490	2511-0310100	STA	$750.000	7.700	0.000	0.000	0.000	0.000	$0.00	$0.00
SPECIAL COMPACTION OF SUBGRADE FOR RECREATIONAL TRAIL										
0500	2511-6745900	SY	$10.000	3,506.000	0.000	676.000	676.000	676.000	$0.00	$6,760.00
REMOVAL OF SIDEWALK										
0510	2511-7526004	SY	$49.750	4,023.000	0.000	591.050	591.050	591.050	$0.00	$29,404.74
SIDEWALK, P.C. CONCRETE, 4 IN.										
0520	2511-7526006	SY	$77.000	267.000	0.000	101.263	101.263	101.263	$0.00	$7,797.25
SIDEWALK, P.C. CONCRETE, 6 IN.										
0530	2511-7528101	SF	$51.000	362.000	0.000	70.000	70.000	70.000	$0.00	$3,570.00
DETECTABLE WARNINGS										

Line Number	Item ID	Unit	Unit Price	Authorized Quantity	Current Paid Quantity	Previous Paid Quantity	Total Quantity Paid To Date	Total Quantity Placed To Date	Current Payment Amount	Total Amount Paid To Date
0540	2512-1725206	LF	$79.000	10.000	0.000	0.000	0.000	0.000	$0.00	$0.00
CURB AND GUTTER, P.C. CONCRETE, 2.0 FT.										
0550	2514-0000200	STA	$1,000.000	0.500	0.000	0.000	0.000	0.000	$0.00	$0.00
REMOVAL OF CURB										
0560	2515-2475006	SY	$52.500	2,550.000	461.750	266.410	728.160	728.160	$24,241.87	$38,228.40
DRIVEWAY, P.C. CONCRETE, 6 IN.										
0570	2515-2475007	SY	$54.000	1,047.000	0.000	0.000	0.000	0.000	$0.00	$0.00
DRIVEWAY, P.C. CONCRETE, 7 IN.										
0580	2515-6745600	SY	$10.000	3,212.000	79.592	659.008	738.600	738.600	$795.92	$7,386.00
REMOVAL OF PAVED DRIVEWAY										
0590	2523-0000310	EACH	$1,235.000	6.000	0.000	0.000	0.000	0.000	$0.00	$0.00
HANDHOLES AND JUNCTION BOXES										
0600	2524-6765110	EACH	$300.000	72.000	0.000	16.000	16.000	16.000	$0.00	$4,800.00
REMOVAL OF TYPE A SIGN										
0610	2524-6765210	EACH	$100.000	21.000	0.000	4.000	4.000	4.000	$0.00	$400.00
REMOVAL OF TYPE A SIGN ASSEMBLY										
0620	2524-9276010	LF	$35.000	390.000	50.000	0.000	50.000	50.000	$1,750.00	$1,750.00
PERFORATED SQUARE STEEL TUBE POSTS										
0630	2524-9276021	EACH	$100.000	39.000	5.000	0.000	5.000	5.000	$500.00	$500.00
PERFORATED SQUARE STEEL TUBE POST ANCHOR, BREAK-AWAY SOIL INSTALLATION										

Line Number	Item ID	Unit	Unit Price	Authorized Quantity	Current Paid Quantity	Previous Paid Quantity	Total Quantity Paid To Date	Total Quantity Placed To Date	Current Payment Amount	Total Amount Paid To Date
0640	2524-9325001	SF	$35.000	392.500	70.000	0.000	70.000	70.000	$2,450.00	$2,450.00
TYPE A SIGNS, SHEET ALUMINUM										
0650	2525-0000100	LS	$100,000.000	1.000	0.000	0.000	0.000	0.000	$0.00	$0.00
TRAFFIC SIGNALIZATION										
0660	2527-9263109	STA	$86.000	136.000	8.840	9.770	18.610	18.610	$760.24	$1,600.46
PAINTED PAVEMENT MARKING, WATERBORNE OR SOLVENT-BASED										
0670	2527-9263117	STA	$116.000	168.000	0.000	0.000	0.000	0.000	$0.00	$0.00
PAINTED PAVEMENT MARKINGS, DURABLE										
0680	2527-9263137	EACH	$130.000	25.000	0.000	0.000	0.000	0.000	$0.00	$0.00
PAINTED SYMBOLS AND LEGENDS, WATERBORNE OR SOLVENT-BASED										
0690	2527-9263143	EACH	$185.000	25.000	0.000	0.000	0.000	0.000	$0.00	$0.00
PAINTED SYMBOLS AND LEGENDS, DURABLE										
0700	2527-9270111	STA	$83.000	168.000	0.000	0.000	0.000	0.000	$0.00	$0.00
GROOVES CUT FOR PAVEMENT MARKINGS										
0710	2527-9270120	EACH	$220.000	25.000	0.000	0.000	0.000	0.000	$0.00	$0.00
GROOVES CUT FOR SYMBOLS AND LEGENDS										
0720	2528-8445110	LS	$75,000.000	1.000	0.000	0.327	0.327	0.327	$0.00	$24,525.00
TRAFFIC CONTROL										
0730	2528-9290050	CDAY	$200.000	60.000	0.000	14.000	14.000	14.000	$0.00	$2,800.00
PORTABLE DYNAMIC MESSAGE SIGN (PDMS)										

Line Number	Item ID	Unit	Unit Price	Authorized Quantity	Current Paid Quantity	Previous Paid Quantity	Total Quantity Paid To Date	Total Quantity Placed To Date	Current Payment Amount	Total Amount Paid To Date
0740	2529-5070110	SY	$100.000	51.000	0.000	100.678	100.678	100.678	$0.00	$10,067.80
PATCHES, FULL-DEPTH FINISH, BY AREA										
0750	2533-4980005	LS	$600,000.000	1.000	0.000	0.500	0.500	0.500	$0.00	$300,000.00
MOBILIZATION										
0760	2552-0000220	CY	$75.000	975.000	0.000	0.000	0.000	0.000	$0.00	$0.00
REPLACEMENT OF UNSUITABLE BACKFILL MATERIAL										
0770	2599-9999010	LS	$15,000.000	1.000	0.000	0.320	0.320	0.320	$0.00	$4,800.00
('LUMP SUM' ITEM): MAINTENANCE OF SOLID WASTE COLLECTION										
0780	2599-9999010	LS	$1,850.000	1.000	0.000	0.000	0.000	0.000	$0.00	$0.00
('LUMP SUM' ITEM): REMOVE AND REINSTALL ELECTRONIC SPEED SIGN										
0790	2599-9999010	LS	$7,200.000	1.000	0.000	0.327	0.327	0.327	$0.00	$2,354.40
('LUMP SUM' ITEM): SWPPP MANAGEMENT										
0800	2599-9999010	LS	$80,000.000	1.000	0.000	0.440	0.440	0.440	$0.00	$35,200.00
('LUMP SUM' ITEM): VIBRATION MONITORING										
0810	2601-2634105	ACRE	$4,110.000	2.630	0.300	0.000	0.300	0.300	$1,233.00	$1,233.00
MULCHING, BONDED FIBER MATRIX										
0820	2601-2639010	SQ	$65.000	1,150.000	0.000	170.000	170.000	170.000	$0.00	$11,050.00
SODDING										
0830	2601-2643110	MGAL	$75.000	690.000	0.000	0.000	0.000	0.000	$0.00	$0.00
WATERING FOR SOD, SPECIAL DITCH CONTROL, OR SLOPE PROTECTION										

Line Number	Item ID	Unit	Unit Price	Authorized Quantity	Current Paid Quantity	Previous Paid Quantity	Total Quantity Paid To Date	Total Quantity Placed To Date	Current Payment Amount	Total Amount Paid To Date
0840	2602-0000150	LF	$15.000	300.000	0.000	0.000	0.000	0.000	$0.00	$0.00
STABILIZED CONSTRUCTION ENTRANCE, EC-303										
0850	2602-0000309	LF	$3.000	10,000.000	0.000	155.000	155.000	155.000	$0.00	$465.00
PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE, 9 IN. DIA.										
0860	2602-0000351	LF	$0.010	10,000.000	0.000	0.000	0.000	0.000	$0.00	$0.00
REMOVAL OF PERIMETER AND SLOPE OR DITCH CHECK SEDIMENT CONTROL DEVICE										
0870	2602-0000500	LF	$10.000	32.000	0.000	16.000	16.000	16.000	$0.00	$160.00
OPEN-THROAT CURB INTAKE SEDIMENT FILTER, EC-602										
0880	2602-0000530	EACH	$95.000	110.000	0.000	20.000	20.000	20.000	$0.00	$1,900.00
GRATE INTAKE SEDIMENT FILTER BAG, EC-604										
0890	2602-0010010	EACH	$600.000	1.000	3.000	0.000	3.000	3.000	$1,800.00	$1,800.00
MOBILIZATIONS, EROSION CONTROL										
0900	2602-0010020	EACH	$1,200.000	1.000	0.000	0.000	0.000	0.000	$0.00	$0.00
MOBILIZATIONS, EMERGENCY EROSION CONTROL										
8001	2599-9999005	EACH	$14,250.000	1.000	0.000	1.000	1.000	1.000	$0.00	$14,250.00
('EACH' ITEM): INTAKE, SW-506 MOD, CAST-IN-PLACE										
8002	2435-0250610	EACH	$14,410.000	2.000	0.000	0.000	0.000	0.000	$0.00	$0.00
INTAKE, SW-506 MOD										
8009	2599-9999018	SY	$0.300	19,678.000	0.000	2,519.817	2,519.817	2,519.817	$0.00	$755.95
('SQUARE YARDS' ITEM): (REINFORCEMENT ADJ)										

Line Number	Item ID	Unit	Unit Price	Authorized Quantity	Current Paid Quantity	Previous Paid Quantity	Total Quantity Paid To Date	Total Quantity Placed To Date	Current Payment Amount	Total Amount Paid To Date
8010	2430-0000100	SF	$74.000	144.000	144.000	0.000	144.000	144.000	$10,656.00	$10,656.00
MODULAR BLOCK RETAIN WALL										
8011	2599-9999005	EACH	$4,325.750	2.000	2.000	0.000	2.000	2.000	$8,651.50	$8,651.50
('EACH' ITEM): INSTALLATION AND REMOVAL OF TEMPORARY INTAKE										
								Section Totals:	$249,971.00	$1,553,696.71
Section: 0002 - STP-U-8477(615)--70-77, Roadway Items - Division 2										
0910	2554-0114004	LF	$65.000	35.000	0.000	0.000	0.000	0.000	$0.00	$0.00
WATER MAIN, TRENCHED, POLYVINYL CHLORIDE PIPE (PVC), 4 IN.										
0920	2554-0114006	LF	$60.000	101.000	0.000	124.000	124.000	124.000	$0.00	$7,440.00
WATER MAIN, TRENCHED, POLYVINYL CHLORIDE PIPE (PVC), 6 IN.										
0930	2554-0114008	LF	$55.000	558.000	0.000	175.000	175.000	175.000	$0.00	$9,625.00
WATER MAIN, TRENCHED, POLYVINYL CHLORIDE PIPE (PVC), 8 IN.										
0940	2554-0114008	LF	$80.000	455.000	0.000	99.000	99.000	99.000	$0.00	$7,920.00
WATER MAIN, TRENCHED, POLYVINYL CHLORIDE PIPE (PVC), 8 IN.: RESTRAINED JOINT										
0950	2554-0114012	LF	$80.000	3,703.000	0.000	702.000	702.000	702.000	$0.00	$56,160.00
WATER MAIN, TRENCHED, POLYVINYL CHLORIDE PIPE (PVC), 12 IN.										
0960	2554-0114012	LF	$105.000	631.000	0.000	550.000	550.000	550.000	$0.00	$57,750.00
WATER MAIN, TRENCHED, POLYVINYL CHLORIDE PIPE (PVC), 12 IN.: RESTRAINED JOINT										
0970	2554-0134008	LF	$165.000	100.000	0.000	0.000	0.000	0.000	$0.00	$0.00
WATER MAIN WITH CASING PIPE, TRENCHED, POLYVINYL CHLORIDE PIPE (PVC), 8 IN.										

Line Number	Item ID	Unit	Unit Price	Authorized Quantity	Current Paid Quantity	Previous Paid Quantity	Total Quantity Paid To Date	Total Quantity Placed To Date	Current Payment Amount	Total Amount Paid To Date
0980	2554-0134012	LF	$240.000	100.000	0.000	0.000	0.000	0.000	$0.00	$0.00
WATER MAIN WITH CASING PIPE, TRENCHED, POLYVINYL CHLORIDE PIPE (PVC), 12 IN.										
0990	2554-0203000	LB	$20.000	6,162.000	0.000	3,467.000	3,467.000	3,467.000	$0.00	$69,340.00
FITTINGS BY WEIGHT, DUCTILE IRON										
1000	2554-0207008	EACH	$2,700.000	12.000	0.000	3.000	3.000	3.000	$0.00	$8,100.00
VALVE, GATE, DIP, 8 IN.										
1010	2554-0207012	EACH	$4,500.000	9.000	0.000	2.000	2.000	2.000	$0.00	$9,000.00
VALVE, GATE, DIP, 12 IN.										
1020	2554-0210201	EACH	$8,500.000	15.000	0.000	5.000	5.000	5.000	$0.00	$42,500.00
FIRE HYDRANT ASSEMBLY, WM-201										
1030	2554-0211002	EACH	$1,750.000	6.000	0.000	6.000	6.000	6.000	$0.00	$10,500.00
FLUSHING DEVICE (BLOWOFF), 2 IN.										
1040	2599-9999005	EACH	$6,500.000	2.000	0.000	1.000	1.000	1.000	$0.00	$6,500.00
('EACH' ITEM): PREPARE EXCAVATION FOR TAPPING SLEEVE & VALVE										
1050	2599-9999005	EACH	$410.000	51.000	0.000	16.000	16.000	16.000	$0.00	$6,560.00
('EACH' ITEM): TAP FEE, 1-IN, REPLACEMENT TAP FOR WATER SERVICE TRANSFER										
1060	2599-9999005	EACH	$1,725.000	3.000	0.000	0.000	0.000	0.000	$0.00	$0.00
('EACH' ITEM): TAP FEE, 2-IN, REPLACEMENT TAP FOR WATER SERVICE TRANSFER										
1070	2599-9999005	EACH	$3,800.000	11.000	0.000	1.000	1.000	1.000	$0.00	$3,800.00
('EACH' ITEM): WATER SERVICE TRANSFER, COPPER, 1-IN, OPPOSITE SIDE										

Line Number	Item ID	Unit	Unit Price	Authorized Quantity	Current Paid Quantity	Previous Paid Quantity	Total Quantity Paid To Date	Total Quantity Placed To Date	Current Payment Amount	Total Amount Paid To Date
1080	2599-9999005	EACH	$3,000.000	40.000	0.000	15.000	15.000	15.000	$0.00	$45,000.00
('EACH' ITEM): WATER SERVICE TRANSFER, COPPER, 1-IN, SAME SIDE										
1090	2599-9999005	EACH	$5,400.000	1.000	0.000	0.000	0.000	0.000	$0.00	$0.00
('EACH' ITEM): WATER SERVICE TRANSFER, COPPER, 2-IN, OPPOSITE SIDE										
1100	2599-9999005	EACH	$3,400.000	2.000	0.000	0.000	0.000	0.000	$0.00	$0.00
('EACH' ITEM): WATER SERVICE TRANSFER, COPPER, 2-IN, SAME SIDE										
1110	2599-9999005	EACH	$6,100.000	1.000	0.000	0.000	0.000	0.000	$0.00	$0.00
('EACH' ITEM): WATER SERVICE TRANSFER, EQUAL TO OR GREATER THAN 3, SAME SIDE										
1120	2599-9999009	LF	$45.000	1,005.000	0.000	436.000	436.000	436.000	$0.00	$19,620.00
('LINEAR FEET' ITEM): REMOVAL OF EXISTING WATER MAIN IN CONFLICT WITH NEW CONSTRUCTION										
1130	2599-9999020	TON	$65.000	100.000	0.000	0.000	0.000	0.000	$0.00	$0.00
('TONS' ITEM): FOUNDATION ROCK										
8003	2504-0114018	LF	$572.000	20.000	0.000	0.000	0.000	0.000	$0.00	$0.00
SAN SWR G-MAIN, TRENCHED, PVC, 18"										
8004	2554-0112008	LF	$247.500	8.000	0.000	0.000	0.000	0.000	$0.00	$0.00
WATER MAIN, TRENCHED, DIP, 8"										
8005	2554-0112012	LF	$154.000	260.000	0.000	0.000	0.000	0.000	$0.00	$0.00
WATER MAIN, TRENCHED, DIP, 12"										
8006	2554-0207006	EACH	$3,509.000	3.000	0.000	1.000	1.000	1.000	$0.00	$3,509.00
VALVE, GATE, DIP, 6"										

Line Number	Item ID	Unit	Unit Price	Authorized Quantity	Current Paid Quantity	Previous Paid Quantity	Total Quantity Paid To Date	Total Quantity Placed To Date	Current Payment Amount	Total Amount Paid To Date
8007	2554-0112012	LF	$176.000	83.000	0.000	0.000	0.000	0.000	$0.00	$0.00
WATER MAIN, TRENCHED, DIP, 12": (RESTRAINED JOINT)										
8008	2599-9999005	EACH	$1,760.000	8.000	0.000	0.000	0.000	0.000	$0.00	$0.00
('EACH' ITEM): 32 LB MAGNESIUM ANODE										
								Section Totals:	$0.00	$363,324.00
								Total Payments:	$249,971.00	$1,917,020.71

Time Charges

Time Limit	Original Deadline	Authorized Deadline	Charges This Period	Damages This Period	Days Completed To Date	Days Remaining To Date	Damages To Date
Working Days, Late Start Date - 05/06/2024, Liquidated Damage Rate - 2,500	300.0 Days	306.0 Days	12.0 Days	$0.00	126.0 Days	180.0 Days	$0.00
						Total Damages:	$0.00

Stockpiles

Stockpile	Fund Package		Current Advancements	Advancements To Date	Current Recoveries	Recoveries To Date
#1 - 2554-0203000	77-8477-615-CAT-2 77-8477-615-CAT-2 77-8477-615		$0.00	$12,845.16	$0.00	$12,845.16
		Totals:	$0.00	$58,873.55	$0.00	$24,181.09

Stockpile	Fund Package		Current Advancements	Advancements To Date	Current Recoveries	Recoveries To Date
FITTINGS BY WEIGHT, DUCTILE IRON						
#2 - 2554-0207008	77-8477-615-CAT-2 77-8477-615-CAT-2 77-8477-615		$0.00	$5,580.00	$0.00	$3,720.00
VALVE, GATE, DIP, 8 IN.						
#3 - 2554-0114012	77-8477-615-CAT-2 77-8477-615-CAT-2 77-8477-615		$0.00	$3,430.00	$0.00	$3,430.00
WATER MAIN, TRENCHED, POLYVINYL CHLORIDE PIPE (PVC), 12 IN.						
#4 - 2554-0211002	77-8477-615-CAT-2 77-8477-615-CAT-2 77-8477-615		$0.00	$185.93	$0.00	$185.93
FLUSHING DEVICE (BLOWOFF), 2 IN.						
#5 - 2599-9999005	77-8477-615-CAT-2 77-8477-615-CAT-2 77-8477-615		$0.00	$4,000.00	$0.00	$4,000.00
('EACH' ITEM): WATER SERVICE TRANSFER, COPPER, 1-IN, SAME SIDE						
#6 - 2525-0000100	77-8477-615-CAT-1 77-8477-615-CAT-1 77-8477-615		$0.00	$32,832.46	$0.00	$0.00
TRAFFIC SIGNALIZATION						
		Totals:	$0.00	$58,873.55	$0.00	$24,181.09

Summary

Current Approved Work:	$249,971.00	**Approved Work To Date:**	$1,917,020.71
Current Stockpile Advancement:	$0.00	**Stockpile Advancement To Date:**	$58,873.55
Current Stockpile Recovery:	$0.00	**Stockpile Recovery To Date:**	$24,181.09
Current Retainage:	$0.00	**Retainage To Date:**	$30,000.00
Current Retainage Released:	$0.00	**Retainage Released To Date:**	$0.00
Current Liquidated Damages:	$0.00	**Liquidated Damages To Date:**	$0.00
Current Adjustment:	$0.00	**Adjustments To Date:**	$0.00
Current Payment:	$249,971.00	**Payments To Date:**	$1,921,713.17
Previous Payment:	$72,124.79	**Previous Payments To Date:**	$1,671,742.17

Funding Details

77-8477-615-CAT-1 77-8477-615-CAT-1 77-8477-615:	$249,971.00	**77-8477-615-CAT-1 77-8477-615-CAT-1 77-8477-615 To Date:**	$1,557,205.71
77-8477-615-CAT-2 77-8477-615-CAT-2 77-8477-615:	$0.00	**77-8477-615-CAT-2 77-8477-615-CAT-2 77-8477-615 To Date:**	$359,815.00
77-8477-615-CAT-3 NON-PARTICIPATING:	$0.00	**77-8477-615-CAT-3 NON-PARTICIPATING To Date:**	$0.00
Current Payment:	$249,971.00	**Payments To Date:**	$1,917,020.71

CONTRACTOR'S CERTIFICATION:

Contractor certifies that to the best of Contractor's knowledge, information and belief, the Work covered by this Payment Application has been completed in accordance with the Contract Documents, that all amounts have been paid by Contractor for Work for which payments were issued and payments received from the City of Windsor Heights, and that the current payment applied herein is now due.

By:_____ Date:_____

ENGINEER'S CERTIFICATION:

In accordance with the Contract Documents, based on on-site observations and the data comprising this Payment Application, the Construction Project Manager certifies to the City of Windsor Heights that to the best of the Construction Project Manager's knowledge, information, and belief, the Work has progressed as indicated, the quality of the Work is in accordance with the Contract Documents, and Contractor is entitled to payment of Amount Certified.

AMOUNT CERTIFIED: $_____

By:_____ Date:_____

CITY OF WINDSOR HEIGHTS REVIEW / APPROVAL:

By:_____ Date:_____

Doc Express® Document Signing History

Contract: 77-8477-615 Document: payment-8-20250102

This document is in the process of being signed by all required signatories using the Doc Express® service. Following are the signatures that have occurred so far.

Date	Signed By
01/09/2025	Logan Petersen Absolute Concrete Construction Inc. Electronic Signature (Approved by Contractor (Optional))
01/09/2025	Justin Ernst Bolton & Menk, Inc. - Iowa Electronic Signature (Recommended by Engineer)
	(Approved by PIRC (when applicable))

STAFF REPORT
CITY COUNCIL
January 23, 2025

TO: CITY COUNCIL

FROM:

SUBJECT: Approve Proclamation for Slavery and Human Trafficking Prevention Month January 2025

GENERAL INFORMATION

ATTACHMENTS

1. 2025-NAHT-ProclamationSigned

City of Windsor Heights

Proclamation for Slavery and Human Trafficking Prevention Month January 2025

Whereas, the United States was founded upon the principle that all people are created with the inalienable right to freedom, and added the 13th Amendment to the Constitution making slavery illegal; and

Whereas, slavery within the United States today is most often found in the form of forced labor and sex trafficking, which weakens our social fabric, increases violence and organized crime, and debases our humanity; and

Whereas, this heinous crime is found within our own community; and

Whereas, the Iowa Network Against Human Trafficking and Slavery has been working since 2005 to abolish all forms of human trafficking through education, prevention, volunteerism, advocacy and collaboration; and

Whereas, even though awareness of this crime is growing, human trafficking continues to go unreported due to its isolating nature, the misunderstanding of its definition, and the lack of awareness about its indicators; and

Whereas, increased community education on how to identify victims of human trafficking along with increased knowledge of local resources and services for those affected by these criminal actions can help restore freedom and dignity to identified survivors, as well as help diminish the number of future victims; and

Whereas, every business, community organization, faith community, family and individual can make a difference by choosing products that are not made by forced labor; by working to protect our young people from sexual exploitation; by addressing the problem of internet sex trafficking and pornography; and by becoming more aware of the problem and possible solutions; and

Now, Therefore, I Mike Jones, Mayor of the City of Windsor Heights, Iowa, do hereby proclaim the month of January 2025 as Slavery and Human Trafficking Prevention Month, and encourage all our citizens to become more informed on this growing problem, to be vigilant and report suspicious activity, and to work towards solutions to end trafficking in all its forms in our community. If you see something that doesn't look right, take action and call the National Human Trafficking Hotline at 888-3737-888. For more information and resources about trafficking in Iowa, go to the Network Against Human Trafficking and Slavery website at www.iowanaht.org.

CITY WINDSOR HEIGHTS IOWA SEAL

Signed this 2nd Day of January, 2025

Mike Jones
Mayor of Windsor Heights

STAFF REPORT
CITY COUNCIL
January 23, 2025

TO: CITY COUNCIL

FROM: Adam Strait, City Clerk

SUBJECT: Approve Resolution No. 2025-08 - A Resolution Establishing A Policy For Sharing Third Party Messaging

GENERAL INFORMATION

This policy addresses a need for staff clarification on how to handle requests from third parties and partners for sharing messaging from their organizations. The policy defines what type of messaging will be allowed to be shared from their organization as well as defining how it will be shared through the City's three main channels of communication.

The Communications Committee met on January 9th and recommended the approval of the proposed policy.

ATTACHMENTS

1. Third Party Message Request Policy
2. Resolution No. 2025-08 - A Resolution Establishing A Policy for Sharing Third Party Messaging

CITY OF WINDSOR HEIGHTS
THIRD PARTY MESSAGING POLICY

The City of Windsor Heights has three main forms of communication to keep Windsor Heights residents informed. These are a monthly newsletter, social media, and website.

The main reason for this is to provide City of Windsor Heights news. This includes minutes from the City Council and other boards and commissions, public hearing notices, city event schedule, rate change information, solid waste schedule, and city department notices.

To keep residents informed of additional community events, the City of Windsor Heights will, on occasion, share messaging from external sources.

The City of Windsor Heights **will allow** the following types of submissions:

- Non-profits that demonstrate a community benefit
- Organizations that receive Windsor Heights taxpayer money for their operations such as the Windsor Heights Chamber, Windsor Heights Foundation, DART, etc.
- Windsor Heights based community groups such as a book or crochet club
- Windsor Heights residential yard sales (*Website Only)*

The City of Windsor Heights **not allow** the following types of submissions:

- Private individuals, candidates, candidate's committees, staff, non-profit organizations, or businesses opinions or public statements
- For profit advertisements, excluding garage sales
- Recruitment or sponsorship advertisements
- Political candidates (or their campaign committee), who are running for offices the residents of Windsor Heights will be voting for
- Paid placements

Submissions requesting space in the monthly newsletter will be welcome, but submitters will be made aware that space is reserved for City business and will take priority over submissions. If space allows, submissions will be reviewed by the City's designated Communications Director for placement based on time of receipt from oldest to newest. Space in the newsletter is extremely limited for non-City business.

Submissions requesting social media sharing will need to be the City's social media guidelines within the Communications Policy. Messaging through social media should be strategically shared to not overwhelm or spam followers with content. The City will share up to three external messages per week. Submissions will be reviewed by the City's

designated Communications Director for sharing based on time of receipt from oldest to newest. Organizations will be limited to one message shared through social media a week. The post must be shared from the organization's account. If a platform does not allow sharing, the organization must provide content to post that the City.

Submissions for the website will be allowed to be placed on a specified "Community Bulletin" page https://www.windsorheights.org/817/Community-Bulletin-Board.

All shared messaging also must include the following statement "The City is sharing this for informational purposes. All responsibility belongs to [Organization name]. Contact them for more information."

The City will not provide any communication services to organizations and reserves the right to deny any submissions with incomplete content.

There will not be a fee associated with sharing partner messages.

RESOLUTION NO. 2025-08
A RESOLUTION ESTABLISHING A POLICY FOR SHARING THIRD PARTY MESSAGING

WHEREAS, the City of Windsor Heights values communicating what is happening within the City with residents; and

WHEREAS, the City would like to keep residents informed of non-City hosted happenings; and

WHEREAS, the Communications Committee met and recommended approval of the policy.

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Windsor Heights, Iowa, that the attached City of Windsor Third Party Messaging Policy is hereby approved and adopted and shall be incorporated into the City's Communications Policy.

Passed and Approved this 23rd day of January, 2025.

_____
Mike Jones, Mayor

_____
Attest: Adam Strait, City Clerk

STAFF REPORT
CITY COUNCIL
January 23, 2025

TO: CITY COUNCIL

FROM: Adam Plagge, City Administrator

SUBJECT: Approve City Administrator to Execute YMCA - Windsor Heights Colby Park Use Agreement

GENERAL INFORMATION

Attached is the draft Use Agreement between the City of Windsor Heights and the YMCA. The draft is subject to finalization of some outstanding details prior to execution by City Administration and the YMCA. The Agreement shall include a Windsor Heights resident discount.

ATTACHMENTS

1. DRAFT YMCA Colby Park Use Agreement - Under Legal Review
2. City of Windsor Heights - YMCA Certificate of Insurance -1

YMCA Colby Park Use Agreement

This Agreement is entered into by and between the **City of Windsor Heights** (hereinafter referred to as the "City") and the **YMCA** (hereinafter referred to as the "YMCA").

Contracted Payment Amount: $1,000

Term of Agreement: The YMCA shall hold a summer camp in Colby Park from **June 9, 2025, to August 15, 2025.**

Terms and Conditions

Registration and Resident Benefits

1. **Priority Registration:** Registration for the camp shall first open to Windsor Heights residents for a minimum of two weeks.
2. **Resident Discount:** Windsor Heights residents shall receive a $10 weekly discount.

Hours of Operation

- Camp hours shall be **7:00 AM to 6:00 PM.**

Participation Cap

- The maximum number of participants shall be limited to **65.**

Park Accessibility

1. **General Public Access:** Colby Park shall remain open to the general public during YMCA use. The restricted Use Area, as outlined in Exhibit A, shall only be utilized for large group YMCA activities during designated times.
2. **Playground Usage:** The YMCA may utilize the playground daily between **7:00 AM and 10:00 AM.** Additional usage outside these hours shall require City Administrator or Public Works Director approval. The City reserves the right to adjust hours of utilization if the need arises.
3. **Splashpad Usage:** The YMCA may utilize the splashpad on Monday and Wednesdays between **10:00 AM and 11:30 AM.** Additional usage outside these hours shall require City approval. The City reserves the right to adjust hours of utilization.

Facility Usage

1. **Community Events Center (CEC):**
    - The YMCA may use the Community Center (CEC) during rain days if the space is available. The YMCA shall not use the CEC, except for the small kitchen, outside these hours unless inclement weather occurs. In such cases, the YMCA may use the CEC for shelter.

- The City shall share the CEC booking calendar with the YMCA, and bookings shall be made at least two days in advance. It shall be the YMCA's responsibility to confirm availability of the CEC for their use.
- The YMCA is responsible for cleaning the CEC after use and restoring it to its pre-use configuration. Cleaning includes restrooms, tables, chairs, and sweeping and moping of floors. Cleaning supplies are available in the facility. Any damages or additional cleaning conducted by the City will be billed to the YMCA. All doors shall be locked after use. The YMCA shall sign the standard CEC rental agreement which lists restricted uses such as glitter, duct tape and other items.

2. **Ballfield and Pavilion:**
    - The YMCA may use the ballfield and pavilion if not otherwise booked or utilized for other activities, such as Yoga in the Park.

City Events

1. The YMCA shall work around planned City/Foundation events, including Tuesday Nights in the Heights (Tuesdays 6:00 PM June 24th through August 5th) and other City and Foundation park activities.
2. During setup or operational hours for such events, Use Area 3 and the hard surface Use Area 2 shall serve as the YMCA's primary spaces.

Park Maintenance

1. To minimize turf wear and tear, the YMCA shall rotate primary space utilization between the four Use Areas identified in Attachment A.
2. The dumpster north of Public Works and east of the CEC shall be available for the YMCA's lunchtime trash disposal. Trash from organized activities must not be placed in small park receptacles.
3. The YMCA shall perform a mid-day spot clean of CEC exterior restrooms and restock toilet paper if needed and retain a log sheet. The City shall conduct standard regularly scheduled cleanings of these facilities.
4. Windsor Heights Park Department shall conduct routine maintenance, including mowing, fertilizer applications, and herbicide treatments during regular business hours. The Public Works Department shall develop and share a maintenance schedule with the YMCA. Advanced notice of pesticide/herbicide treatment shall be provided and 24-hour signage shall be placed when treatment occurs.
5. The YMCA may place a small shed west adjacent to the Public Works facility for supply storage or park a trailer at the west end of the parking lot.
6. The City reserves the right to close the park in case of flooding or hazardous conditions.
7. Park Contractor will be back in the spring/summer working in the area on any outstanding items and/or any warranty work as part of the project completion.

Prairie Area Restrictions

- The area west of the ball diamond and southeast of the pavilion, designated for prairie establishment, shall not be available for YMCA use.

Irrigation Awareness

- The YMCA is advised that irrigation zones operate from **4:30 AM to 6:30 AM**, potentially leaving some areas damp. Two primary hard surface use areas, in addition to the pavilion, are noted in Attachment A for use during wet conditions.

Insurance

The YMCA shall maintain the liability insurance included as Attachment B and hold the City harmless for any injury or damage occurring to or caused by participants or YMCA Staff.

Attachments

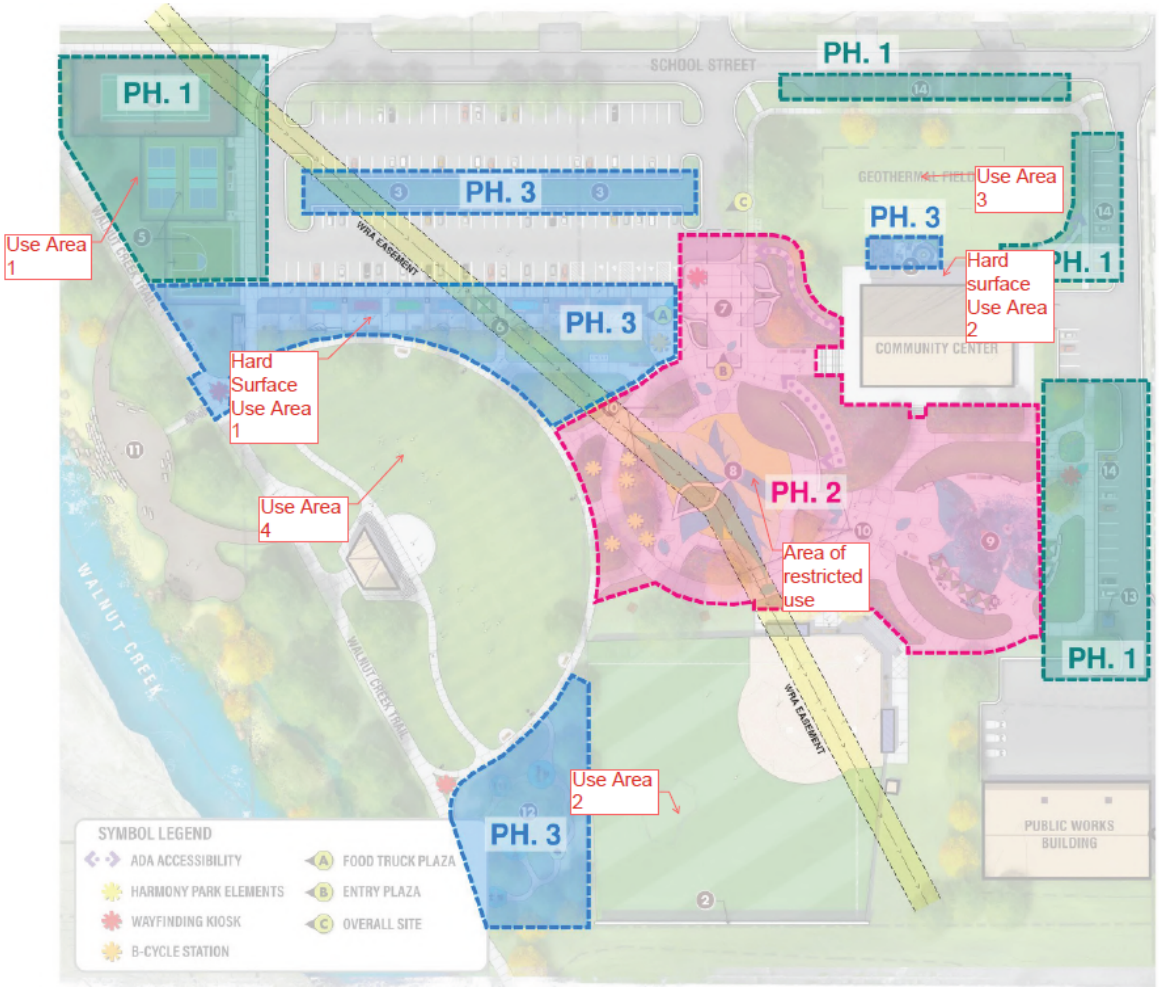
- **Attachment A:** Hard Surface Areas
- **Attachment B:** Insurance

By signing below, both parties agree to the terms and conditions outlined in this agreement.

City of Windsor Heights
By: _____
Title: _____
Date: _____

YMCA
By: _____
Title: _____
Date: _____

Attachment A


PH. 1
PH. 1
PH. 3
PH. 3
PH. 3
PH. 2
PH. 1
PH. 1
Use Area 1
Use Area 3
Hard surface Use Area 2
Hard Surface Use Area 1
Use Area 4
Area of restricted use
Use Area 2
SCHOOL STREET
WRA EASEMENT
COMMUNITY CENTER
PUBLIC WORKS BUILDING
WALNUT CREEK
WALNUT CREEK TRAIL
SYMBOL LEGEND
ADA ACCESSIBILITY
HARMONY PARK ELEMENTS
WAYFINDING KIOSK
B-CYCLE STATION
FOOD TRUCK PLAZA
ENTRY PLAZA
OVERALL SITE

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY): 1/10/2025

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER Holmes Murphy & Associates 2727 Grand Prairie Parkway Waukee IA 50263	**CONTACT NAME:** Lilly Kinley **PHONE (A/C, No, Ext):** 515-974-4602 **FAX (A/C, No):** **E-MAIL ADDRESS:** lkinley@holmesmurphy.com
INSURED YMCGREPC Young Men's Christian Association of Greater Des M 501 Grand Ave. Des Moines, IA 50309	**INSURER(S) AFFORDING COVERAGE** / **NAIC #** **INSURER A :** Great American Insurance Company — 16691 **INSURER B :** Travelers Property Casualty Co. America — 25674 **INSURER C :** **INSURER D :** **INSURER E :** **INSURER F :**

COVERAGES **CERTIFICATE NUMBER:** 1877744374 **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	X **COMMERCIAL GENERAL LIABILITY** CLAIMS-MADE X OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: POLICY X PRO-JECT X LOC OTHER:			PAC5160987	6/3/2024	6/3/2025	EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurrence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG 	$ 1,000,000 $ 1,000,000 $ 10,000 $ 1,000,000 $ 3,000,000 $ 3,000,000 $
A	**AUTOMOBILE LIABILITY** X ANY AUTO OWNED AUTOS ONLY / SCHEDULED AUTOS X HIRED AUTOS ONLY / X NON-OWNED AUTOS ONLY X Comp - $1000 / X Coll - $1000			CAP5160988	6/3/2024	6/3/2025	COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident) 	$ 1,000,000 $ $ $ $
A	X **UMBRELLA LIAB** X OCCUR **EXCESS LIAB** CLAIMS-MADE DED X RETENTION $ 10,000			UMB5160989	6/3/2024	6/3/2025	EACH OCCURRENCE AGGREGATE 	$ 5,000,000 $ 5,000,000 $
B	**WORKERS COMPENSATION AND EMPLOYERS' LIABILITY** Y / N ANYPROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? N **(Mandatory in NH)** If yes, describe under DESCRIPTION OF OPERATIONS below	N / A		6JUB1W01198124	6/3/2024	6/3/2025	X PER STATUTE / OTH-ER E.L. EACH ACCIDENT E.L. DISEASE - EA EMPLOYEE E.L. DISEASE - POLICY LIMIT	 $ 500,000 $ 500,000 $ 500,000
A	Property			PAC5160987	6/3/2024	6/3/2025	Buidings Personal Property Business Income	82,728,349 6,369,497 5,461,828

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

City of Windsor Heights is an Additional Insured on the General Liability policy as required by written contract with the insured, per policy terms and conditions.

CERTIFICATE HOLDER

City of Windsor Heights/Colby Park
6900 School Street
Windsor Heights IA 50324

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

Kari Cooley

© 1988-2015 ACORD CORPORATION. All rights reserved.

STAFF REPORT
CITY COUNCIL
January 23, 2025

TO: CITY COUNCIL

FROM: Jim Mease

SUBJECT: Approve Resolution No. 2025-09 - A Resolution Approving the 28E Agreement For Assistance For Polk County Area Fire and Rescue Services

GENERAL INFORMATION

Below you will find an overview of my recommendation to adopt the updated 28E agreement as set forth by the Polk County Fire Chiefs Association

28E Adoption:

The Polk County Fire Chiefs Association has review, updated, and adopted the previous 28E agreement for mutual aid, last completed in 2017. Through much discussion, multiple items were adjusted to streamline mutual aid needs and expectations. Attached you will find the noted resources for reference:

- Original 2017 28E Agreement
- Updated 28E Agreement (changes crossed out and/or highlighted red)
- Jurisdiction Signature Form

ATTACHMENTS

1. Updated 28E Agreement (changes crossed out and/or highlighted red)
2. Original 2017 28E Agreement
3. Resolution No. 2025-09 - A Resolution Approving the 28E Agreement For Assistance For Polk County Area FireRescue Services
4. 28E AGREEMENT FOR MUTUAL ASSISTANCE Signature Page

Paul D. Pate
Secretary of State
State of Iowa

28E Agreement

Item 1. The full legal name, organization type and county of each participant to this agreement are:

	Full Legal Name	Organization Type	*County
Party 1	City of Altoona	City	Polk
Party 2	City of Ankeny	City	Polk
Party 3	City of Bondurant	City	Polk
Party 4	Camp Township	Township	Polk
Party 5	City of Carlisle	City	Warren
Party 6	City of Bussey	Marion	City
Party 7	Clay Township	Marion	Township
Party 8	City of Clive	Polk	City
Party 9	City of Colfax	Jasper	City
Party 10	Delaware Township	Polk	Township
Party 11	City of Des Moines	Polk	City
Party 12	Des Moines Airport Authority	Polk	Reg or District
Party 13	City of Elkhart	Polk	City
Party 14	City of Granger	Dallas	City
Party 15	City of Grimes	Polk	City
Party 16	City of Harvey	Marion	City
Party 17	City of Indianola	Warren	City
Party 18	City of Johnston	Polk	City
Party 19	City of Knoxville	Marion	City
Party 20	Lake Prairie Fire Service	Marion	Township
Party 21	City of Marshalltown	Marshall	City
Party 22	City of Maxwell	Story	City
Party 23	City of Mingo	Jasper	City
Party 24	City of Mitchellville	Polk	City
Party 25	City of Nevada	Story	City
Party 26	City of Newton	Jasper	City
Party 27	Northern Warren Fire & Emergency Response Agency	Warren	Reg or District
Party 28	City of Norwalk	Warren	City
Party 29	City of Pleasant Hill	Polk	City
Party 25	City of Polk City	Polk	City
Party 26	Saylor Township	Polk	Township

Party 27	City of Urbandale			Polk	City
Party 28	City of Waukee			Dallas	City
Party 29	City of West Des Moines			Polk	City
Party 30	City of Windsor Heights			Polk	City

Item 2. The type of Public Service included in this agreement is: 210 Fire Response
(Enter only one Service Code and Description) Code Number Service Description

Item 3. The purpose of this agreement is: *(please be specific)*

To provide for Mutual Aid in case of an Emergency within the jurisdiction of the Parties to this Agreement arising in Polk County and/or the adjoining counties of Boone, Dallas, Jasper, Madison, Marion, Marshall, Story and Warren.

Item 4. The duration of this agreement is: *(check one)* ☐ Agreement Expires _____ [mm/dd/yyyy] ✓Indefinite Duration

Item 5. Does this agreement amend or renew an existing agreement? *(check one)*

☐ **NO**

☑ **YES** Filing # of the agreement: M508206

(Use the filing number of the most recent version filed for this agreement)
The filing number of the agreement may be found by searching the 28E database at: http://sos.iowa.gov/28e.

Item 6. Attach two copies of the agreement to this form if not filing online.

Item 7. The primary contact for further information regarding this agreement is: *(optional)*

LAST Name _____ **FIRST** Name _____

Title _____ Group: _____

Email _____ Phone _____

28E AGREEMENT FOR MUTUAL ASSISTANCE

for Polk County Area Fire/Rescue Services

WHEREAS, the undersigned entities ("Party" or collectively "Parties") provide fire/rescue services and/or emergency medical services ("Emergency Services") in Polk County and/or the adjoining counties of Boone County, Dallas County, Jasper County, Madison County, Marion County, Marshall County, Story County and Warren County ("adjoining counties"); and

WHEREAS, there has been a long standing Mutual Aid Agreement among Polk County fire/rescue and emergency medical services and/or other entities to provide mutual aid in Polk County and adjoining counties in a time of need;

WHEREAS, the current Mutual Aid Agreement is entitled 28E Agreement for Mutual Assistance for Polk County Fire/Rescue Services and is filed with the Iowa Secretary of State at 10:51 a.m. on June 24, 2015, numbered M508206 ("2015 Agreement"); and

~~**WHEREAS,** the 2015 Agreement has been in force for one year and Parties desire to update; and~~

WHEREAS, the Parties have a desire to assist each other in time of need; and

WHEREAS, the Parties each maintain adequate Emergency Services equipment and personnel to respond to the normal emergencies occurring within their respective jurisdictions; and

WHEREAS, situations may arise in regard to emergencies or circumstances which exhaust available personnel and equipment, or require additional or specialty personnel or additional and/or special equipment that the responsible jurisdiction may not have available at any given time; and

WHEREAS, to combat such emergency situations, it is desirable for the Parties to render needed Emergency Services upon a reciprocal basis; and

WHEREAS, the governing bodies of each party are desirous of entering into this 28E Agreement ("Agreement"), the purpose of which is to provide for the Emergency Services of one entity to the other in such emergency or needed situations requiring additional, special personnel, and/or equipment.

NOW, THEREFORE, BE IT AGREED AS FOLLOWS:

I. Incorporation of Recitals

The foregoing Recitals are incorporated herein as if fully set forth in this paragraph.

II. Definitions

A. Mutual Aid/Automatic Aid. The assistance of Emergency Services personnel and equipment provided by one Party ("Providing Entity") and requested by the other Party ("Requesting Entity") to this Agreement. Automatic Aid is considered a subset of Mutual Aid, and both are interchangeable within this document.

B. Incident Commander. The person who, by virtue of his/her position with the Requesting Entity, is responsible for the overall command and direction of the Emergency response activities.

C. Emergency. Any situation where a Requesting Entity, due to lack of personnel or training, special equipment needs or magnitude of event, and based upon actual circumstances, concludes that assistance is needed from a Providing Entity(s) to protect life, stabilize the incident, and/or protect property within its jurisdiction.

III. Purpose

This Agreement is made pursuant to Chapter 28E, Code of Iowa. The purpose of this Agreement is to provide for Mutual Aid in case of an Emergency arising within the jurisdiction of the Parties to this Agreement.

IV. Request for Assistance

All requests for Mutual Aid in an Emergency shall be made by an Emergency Services director, Fire Chief or designee of the Requesting Entity. Additionally, requests for assistance can also be filled using pre-determined response tables utilizing Computer-Aided Dispatch (CAD) created by the

Requesting Entity and approved the Providing Entity. Such requests shall state the exact nature of the Emergency and shall include the amount and type of equipment and the number and skills of personnel required, and shall specify the location where the personnel and equipment are needed. The final decision of type and amount of equipment and number of personnel to be provided by the Providing Entity to the Requesting Entity shall be at the sole discretion of the Providing Entity. Further, the Providing Entity shall be held harmless by the Requesting Entity from liability in connection with its final decision on type and amount of equipment and number of personnel to be provided to the Requesting Entity.

V. Authority over Joint Operations

The Incident Commander of the Requesting Entity shall retain overall control of all Emergency response activities. The ranking supervisor of the Providing Entity shall remain in command of his/her personnel and equipment subject, however, to the direction and control of the Incident Commander. By previous agreement, Incident Command can be initiated or assumed by a ranking supervisor from the Providing Entity for operational control, and incident safety purposes. It is understood that the purpose of this section is to maintain order for the emergency response and shall not be construed to establish an employer/employee relationship.

VI. Liability

Employees or volunteers of either Party acting pursuant to this Agreement shall be considered as acting under the lawful orders and instructions pertaining to their employment or volunteer status with such Party. Under no circumstances are employees or volunteers of one party to be considered employees or volunteers of the other Party.

Each Party waives all claims against the other for compensation for any property loss or damage and/or personal injury or death to its personnel as consequence of the performance of this Agreement. Each Party shall bear the liability and/or costs of damage to its equipment and facilities, and the compensation of its employees or volunteers, including injury or death of its personnel, occurring as a consequence of the performance of this

Agreement, whether the damages, costs, injury or death occurs at an Emergency in the Party's own jurisdiction or in the jurisdiction of the other Party. Nothing in this agreement is intended nor does it waive any right to seek federal or other assistance provided for disaster relief.

Except as provided herein, each Party shall be responsible for the acts or omissions of its own employees, and shall indemnify, defend and hold harmless the Other Party, its officers, agents and employees from and against any and all suits, actions, debts, damages, costs, charges and expenses, including court costs and attorney's fees arising from loss of or damage to private property, and/or the death of or injury to private persons, arising from services of response rendered pursuant to this Agreement.
Provided, however, the Requesting Entity shall indemnify, defend and hold harmless the Providing Entity where any suits, actions, debts, damages, costs, charges or expenses arise from execution of a specific command or order pursuant to paragraph V of this Agreement.

Nothing in this Agreement shall prevent or limit either Party to this Agreement from recovering or attempting to recover costs of services rendered to a third party where such recovery of costs is provided for by law.

The Parties to this Agreement do not waive any defenses, immunities or other limitations applicable to a respective party and nothing herein shall be so construed. Each Party to this Agreement reserves the right to fully defend all claims arising from loss of or damage to private property and/or death of or injury to private persons who are not parties to this Agreement including, but not limited to asserting defenses of immunities available under applicable law.

This article shall survive the termination of this Agreement where necessary to protect each Party to this Agreement.

VII. Compensation

A. **Emergency Services.** For Emergency Services, no Party shall be required to reimburse any other Party for the cost of providing the services set forth in this Agreement, unless the incident lasts twelve hours or

longer. If an incident lasts twelve hours or longer, the Providing Entity may seek compensation from the Requesting Entity for the cost of providing the services set forth in this Agreement.

All services are billable if the incident lasts a minimum of twelve consecutive hours. Services include, but are not limited to:

a. Personnel (including backfill personnel)
b. Equipment (at rates defined by FEMA)
c. Supplies (actual cost incurred, including shipping of replacement supplies) Documentation is required in the form of an incident report which clearly lists personnel, equipment and supplies used. Supply usage also requires an actual invoice copy.

B. **Emergency Medical Services**. The Party transporting a patient from an emergency location to a medical facility will be responsible for billing the patient for services rendered.

If the Providing Entity provides supplemental services or a higher level of medical services than the Requesting Entity, such as paramedic services, the Requesting Entity may bill the patient for the supplemental services pursuant to accepted billing standards. In the event the Requesting Entity does not charge for ambulance services, the Providing Entity will bill the patient for services rendered and retain one hundred percent (100%) of fees collected.

C. **Hazardous Materials Services**. The Providing Entity may bill the responsible person (as defined by Iowa Administrative Code Sections 133.2 and 133.3) at a hazardous substance or condition incident (as defined in Iowa Administrative Code Section 133.1(2)) to reclaim costs associated with responding to the incident.

VIII. Termination

This Agreement may be terminated with respect to that Party for any reason by any Party by giving written notice, by certified mail to the President of the Polk County Fire Chief's Association. This Agreement shall thereafter terminate, with respect to that Party only, sixty (60) days from the date of receipt of termination notice. Upon termination, said

terminating Party shall have no further responsibility or obligation or benefits from the other Parties to the Agreement, under this Agreement, except as provided herein.

IX. Effective Date

This Agreement shall be in full force and effect at 12:01 a.m., January 1, 2025, by and between the Parties who have obtained approval hereof by their respective governing bodies. Prior to January 1, 2025, the President of the Polk County Fire Chief's Association shall have filed this Agreement with the Iowa Secretary of State as required by Iowa Code section 28E.9. This Agreement shall remain in full force and effect for an indefinite period of time from the effective date hereof until terminated as provided in paragraph VII.

X. Prior Mutual Assistance Agreements

This Agreement supersedes the 2017 Agreement in full.

XI. Amendments

This Agreement represents the entire Agreement of the Parties. Any amendments must be in writing, approved by the governing body of all Parties, and executed by the authorized representatives of all Parties. Any and all amendments must comply with the provisions of Iowa Code section 28E.8. Any and all such requirements shall be done by the then presiding President of the Polk County Fire Chief's Association or President's designee.

XII. Validity

In the event any part or paragraph of this Agreement is declared void as being contrary to Iowa law, the remaining portions of this Agreement that are valid shall continue in full force and effect.

XIII. No Separate Entity Created -- Administration

It is the Intent of the Parties not to create a separate legal entity or administrative agency under this Agreement. The then presiding President of the Polk County Fire Chief's Association shall serve as Administrator of this undertaking.

XIV. No Real or Personal Property

No real or personal property will be acquired, held or disposed of during this undertaking as no separate entity has been created.

XV. Applicable Law

This Agreement shall be governed by and construed in accordance with the laws of the State of Iowa (excluding conflicts of laws rules), and applicable federal law.

XVI. Counterparts

This Agreement may be executed in any number of counterparts, each of which shall be deemed to be an original, but all such counterparts shall together constitute but one and the same instrument.

28E AGREEMENT FOR MUTUAL ASSISTANCE

for Polk County Area Fire/Rescue Services

WHEREAS, the undersigned entities ("Party" or collectively "Parties") provide fire/rescue services and/or emergency medical services ("Emergency Services") in Polk County and/or the adjoining counties of Boone County, Dallas County, Jasper County, Madison County, Marion County, Marshall County, Story County and Warren County ("adjoining counties"); and

WHEREAS, there has been a long standing Mutual Aid Agreement among Polk County fire/rescue and emergency medical services and/or other entities to provide mutual aid in Polk County and adjoining counties in a time of need;

WHEREAS, the current Mutual Aid Agreement is entitled 28E Agreement for Mutual Assistance for Polk County Fire/Rescue Services and is filed with the Iowa Secretary of State at 10:51 a.m. on June 24, 2015, numbered M508206 ("2015 Agreement"); and

WHEREAS, the 2015 Agreement has been in force for one year and Parties desire to update; and

WHEREAS, the Parties have a desire to assist each other in time of need; and

WHEREAS, the Parties each maintain adequate Emergency Services equipment and personnel to respond to the normal emergencies occurring within their respective jurisdictions; and

WHEREAS, situations may arise in regard to emergencies or circumstances which exhaust available personnel and equipment, or require additional or specialty personnel or additional and/or special equipment that the responsible jurisdiction may not have available at any given time; and

WHEREAS, to combat such emergency situations, it is desirable for the Parties to render needed Emergency Services upon a reciprocal basis; and

WHEREAS, the governing bodies of each party are desirous of entering into this 28E Agreement ("Agreement"), the purpose of which is to provide for the Emergency Services of one entity to the other in such emergency or needed situations requiring additional, special personnel, and/or equipment.

NOW, THEREFORE, BE IT AGREED AS FOLLOWS:

I. Incorporation of Recitals

The foregoing Recitals are incorporated herein as if fully set forth in this paragraph.

II. Definitions

A. Mutual Aid. The assistance of Emergency Services personnel and equipment provided by one Party ("Providing Entity") and requested by the other Party ("Requesting Entity") to this Agreement.

B. Incident Commander. The person who, by virtue of his/her position with the Requesting Entity, is responsible for the overall command and direction of the Emergency response activities.

C. Emergency. Any situation where a Party, due to lack of personnel or training, special equipment needs or magnitude of event, and based upon actual circumstances, concludes that assistance is needed to protect life, stabilize the incident, and/or protect property within its jurisdiction.

III. Purpose

This Agreement is made pursuant to Chapter 28E, Code of Iowa. The purpose of this Agreement is to provide for Mutual Aid in case of an Emergency arising within the jurisdiction of the Parties to this Agreement.

IV. Request for Assistance

All requests for Mutual Aid in an Emergency shall be made by an Emergency Services director or designee of the Requesting Entity. Such requests shall state the exact nature of the Emergency and shall include the amount and type of equipment and the number and skills of personnel required, and shall specify the location where the personnel and equipment are needed. The final decision of type and amount of equipment and number of personnel to be provided by the Providing Entity to the Requesting Entity shall be at the sole discretion of the Providing Entity. Further, the Providing Entity shall be held harmless by the Requesting Entity from liability in connection with its final decision on type and amount of equipment and number of personnel to be provided to the Requesting Entity.

V. Authority over Joint Operations

The Incident Commander of the Requesting Entity shall retain overall control of all Emergency response activities. The ranking supervisor of the Providing Entity shall remain in command of his/her personnel and equipment subject, however, to the direction and control of the Incident Commander.

VI. Liability

Employees or volunteers of either Party acting pursuant to this Agreement shall be considered as acting under the lawful orders and instructions pertaining to their

employment or volunteer status with such Party. Under no circumstances are employees or volunteers of one Party to be considered employees or volunteers of the other Party.

Each Party waives all claims against the other for compensation for any property loss or damage and/or personal injury or death to its personnel as consequence of the performance of this Agreement. Each Party shall bear the liability and/or costs of damage to its equipment and facilities, and the compensation of its employees or volunteers, including injury or death of its personnel, occurring as a consequence of the performance of this Agreement, whether the damages, costs, injury or death occurs at an Emergency in the Party's own jurisdiction or in the jurisdiction of the other Party. Nothing in this agreement is intended nor does it waive any right to seek federal or other assistance provided for disaster relief.

Except as provided herein, each Party shall be responsible for the acts or omissions of its own employees, and shall indemnify, defend and hold harmless the Other Party, its officers, agents and employees from and against any and all suits, actions, debts, damages, costs, charges and expenses, including court costs and attorney's fees arising from loss of or damage to private property, and/or the death of or injury to private persons, arising from services of response rendered pursuant to this Agreement. Provided, however, the Requesting Entity shall indemnify, defend and hold harmless the Providing Entity where any suits, actions, debts, damages, costs, charges or expenses arise from execution of a specific command or order pursuant to paragraph V of this Agreement.

Nothing in this Agreement shall prevent or limit either Party to this Agreement from recovering or attempting to recover costs of services rendered to a third party where such recovery of costs is provided for by law.

The Parties to this Agreement do not waive any defenses, immunities or other limitations applicable to a respective party and nothing herein shall be so construed. Each Party to this Agreement reserves the right to fully defend all claims arising from loss of or damage to private property and/or death of or injury to private persons who are not parties to this Agreement including, but not limited to asserting defenses of immunities available under applicable law.

This article shall survive the termination of this Agreement where necessary to protect each Party to this Agreement.

VII. Compensation

A. Emergency Services. For Emergency Services, no Party shall be required to reimburse any other Party for the cost of providing the services set forth in this Agreement, unless the incident lasts twelve hours or longer. If an incident lasts twelve hours or longer, the Providing Entity may seek compensation from the Requesting Entity for the cost of providing the services set forth in this Agreement.

All services are billable if the incident lasts a minimum of twelve consecutive hours. Services include, but are not limited to:

a. Personnel (including backfill personnel)
b. Equipment (at rates defined by FEMA)
c. Supplies (actual cost incurred, including shipping of replacement supplies)

Documentation is required in the form of an incident report which clearly lists personnel, equipment and supplies used. Supply usage also requires an actual invoice copy.

B. Emergency Medical Services. The Party transporting a patient from an emergency location to a medical facility will be responsible for billing the patient for services rendered.

If the Providing Entity provides supplemental services or a higher level of medical services than the Requesting Entity, such as paramedic services, the Requesting Entity may bill the patient for the supplemental services pursuant to accepted billing standards. In the event the Requesting Entity does not charge for ambulance services, the Providing Entity will bill the patient for services rendered and retain one hundred percent (100%) of fees collected.

C. Hazardous Materials Services. The Providing Entity may bill the responsible person (as defined by Iowa Administrative Code Sections 133.2 and 133.3) at a hazardous substance or condition incident (as defined in Iowa Administrative Code Section 133.1(2)) to reclaim costs associated with responding to the incident.

VIII. Termination

This Agreement may be terminated with respect to that Party for any reason by any Party by giving written notice, by certified mail to the President of the Polk County Fire Chief's Association. This Agreement shall thereafter terminate, with respect to that Party only, sixty (60) days from the date of receipt of termination notice. Upon termination, said terminating Party shall have no further responsibility or obligation or benefits from the other Parties to the Agreement, under this Agreement, except as provided herein.

IX. Effective Date

This Agreement shall be in full force and effect at 12:01 a.m., January 1, 2017, by and between the Parties who have obtained approval hereof by their respective governing bodies. Prior to January 1, 2017, the President of the Polk County Fire Chief's Association shall have filed this Agreement with the Iowa Secretary of State as required by Iowa Code section 28E.9. This Agreement shall remain in full force and effect for an indefinite period of time from the effective date hereof until terminated as provided in paragraph VII.

X. Prior Mutual Assistance Agreements

This Agreement supersedes the 2015 Agreement in full.

XI. Amendments

This Agreement represents the entire Agreement of the Parties. Any amendments must be in writing, approved by the governing body of all Parties, and executed by the authorized representatives of all Parties. Any and all amendments must comply with the provisions of Iowa Code section 28E.8. Any and all such requirements shall be done by the then presiding President of the Polk County Fire Chief's Association or President's designee.

XII. Validity

In the event any part or paragraph of this Agreement is declared void as being contrary to Iowa law, the remaining portions of this Agreement that are valid shall continue in full force and effect.

XIII. No Separate Entity Created -- Administration

It is the Intent of the Parties not to create a separate legal entity or administrative agency under this Agreement. The then presiding President of the Polk County Fire Chief's Association shall serve as Administrator of this undertaking.

XIV. No Real or Personal Property

No real or personal property will be acquired, held or disposed of during this undertaking as no separate entity has been created.

XV. Applicable Law

This Agreement shall be governed by and construed in accordance with the laws of the State of Iowa (excluding conflicts of laws rules), and applicable federal law.

XVI. Counterparts

This Agreement may be executed in any number of counterparts, each of which shall be deemed to be an original, but all such counterparts shall together constitute but one and the same instrument.

28E AGREEMENT FOR MUTUAL ASSISTANCE
for Polk County Area Fire/Rescue Services

By authorized signature of this Agreement, Parties agree to the 28E Agreement for Mutual Assistance for Polk County Area Fire/Rescue Services.

Effective Date: January 1, 2017

Legal Name of Jurisdiction: City of Altoona

Jurisdiction Official — Dated 12-19-16

Attest — Dated 12-19-16

Chief/Director — Dated 12-21-16

28E AGREEMENT FOR MUTUAL ASSISTANCE
for Polk County Area Fire/Rescue Services

By authorized signature of this Agreement, Parties agree to the 28E Agreement for Mutual Assistance for Polk County Area Fire/Rescue Services.

Effective Date: January 1, 2017

Legal Name of Jurisdiction: City of Ankeny (IA)

Jurisdiction Official - Mayor — January 3, 2017 Dated

Attest - Deputy City Clerk — January 3, 2017 Dated

Chief/Director - Fire Cheif James Clack — 1/3/2017 Dated

28E AGREEMENT FOR MUTUAL ASSISTANCE
for Polk County Area Fire/Rescue Services

By authorized signature of this Agreement, Parties agree to the 28E Agreement for Mutual Assistance for Polk County Area Fire/Rescue Services.

Effective Date: January 1, 2017

Legal Name of Jurisdiction: City of Bondurant

Jurisdiction Official — Dated 12/7/16

Attest — Dated 12/7/16

Chief/Director — Dated 12/7/16

28E AGREEMENT FOR MUTUAL ASSISTANCE for Polk County Area Fire/Rescue Services

By authorized signature of this Agreement, Parties agree to the 28E Agreement for Mutual Assistance for Polk County Area Fire/Rescue Services.

Effective Date: January 1, 2017

Legal Name of Jurisdiction: City of Bussey

Larry Lonegan (Mayor) — Jurisdiction Official — Dated 12-5-16

Nicki Beary (city clerk) — Attest — Dated 12-5-16

Brian DeBlanc (fire chief) — Chief/Director — Dated 12-5-16

28E AGREEMENT FOR MUTUAL ASSISTANCE
for Polk County Area Fire/Rescue Services

By authorized signature of this Agreement, Parties agree to the 28E Agreement for Mutual Assistance for Polk County Area Fire/Rescue Services.

Effective Date: January 1, 2017

Legal Name of Jurisdiction: Camp Township / Runnells Fire Dept

Mike Morgan
Jurisdiction Official — 12-22-16 Dated

Mary Thompson
Attest — 12-22-16 Dated

Chief/Director — 12-22-16 Dated

28E AGREEMENT FOR MUTUAL ASSISTANCE
for Polk County Area Fire/Rescue Services

By authorized signature of this Agreement, Parties agree to the 28E Agreement for Mutual Assistance for Polk County Area Fire/Rescue Services.

Effective Date: January 1, 2017

Legal Name of Jurisdiction: City of Carlisle, Iowa

Ruth Randleman, Mayor — 14 DEC 2016 Dated

Attest: Andrew J. Lent, City Clerk — 14 DEC 2016 Dated

Cory Glover, Fire Chief — 14 Dec 2016 Dated

28E AGREEMENT FOR MUTUAL ASSISTANCE
for Polk County Area Fire/Rescue Services

By authorized signature of this Agreement, Parties agree to the 28E Agreement for Mutual Assistance for Polk County Area Fire/Rescue Services.

Effective Date: January 1, 2017

Legal Name of Jurisdiction: CLAY TOWNSHIP

Paul Harrington — Jurisdiction Official — 12/6/16 — Dated

[signature] — Attest — 12-6-16 — Dated

Brian J. Inman Brice Loonan — Chief/Director — 12-6-16 — Dated

28E AGREEMENT FOR MUTUAL ASSISTANCE
for Polk County Area Fire/Rescue Services

By authorized signature of this Agreement, Parties agree to the 28E Agreement for Mutual Assistance for Polk County Area Fire/Rescue Services.

Effective Date: January 1, 2017

Legal Name of Jurisdiction: City of Clive

Jurisdiction Official — Dated 12-9-16

Attest — Dated 12/9/2016

Chief/Director — Dated 12-9-16

28E AGREEMENT FOR MUTUAL ASSISTANCE
for Polk County Area Fire/Rescue Services

By authorized signature of this Agreement, Parties agree to the 28E Agreement for Mutual Assistance for Polk County Area Fire/Rescue Services.

Effective Date: January 1, 2017

Legal Name of Jurisdiction: City of Colfax

David Mast, Mayor
Jurisdiction Official — 12-13-2016 Dated

Nancy Eades
Attest — 12-13-2016 Dated

Brandon Brusseau
Chief/Director — 12-13-2016 Dated

28E AGREEMENT FOR MUTUAL ASSISTANCE
for Polk County Area Fire/Rescue Services

By authorized signature of this Agreement, Parties agree to the 28E Agreement for Mutual Assistance for Polk County Area Fire/Rescue Services.

Effective Date: January 1, 2017

Legal Name of Jurisdiction: Delaware Township

Debbie Wise
Jurisdiction Official

December 5, 2016
Dated

Kim Overton
Attest

December 5, 2016
Dated

Joel Westendorf
Chief/Director

December 5, 2016
Dated

28E AGREEMENT FOR MUTUAL ASSISTANCE
for Polk County Area Fire/Rescue Services

By authorized signature of this Agreement, Parties agree to the 28E Agreement for Mutual Assistance for Polk County Area Fire/Rescue Services.

Effective Date: January 1, 2017

Legal Name of Jurisdiction: City of Des Moines, Iowa

T. M. Franklin Cownie

Jurisdiction Official — Dated: DEC 19 2016

T. M. Franklin Cownie MAYOR

Attest City Clerk — Dated: DEC 19 2016

Chief/Director Fire Chief — Dated: 12-21-16

Ann D. Davis
Assistant City Attorney

28E AGREEMENT FOR MUTUAL ASSISTANCE
for Polk County Area Fire/Rescue Services

By authorized signature of this Agreement, Parties agree to the 28E Agreement for Mutual Assistance for Polk County Area Fire/Rescue Services.

Effective Date: January 1, 2017

Legal Name of Jurisdiction: Des Moines Airport Authority

X _____ 12/13/16
Jurisdiction Official — Dated

_____ 12/13/16
Attest — Dated

_____ 12/14/2016
Chief/Director — Dated

28E AGREEMENT FOR MUTUAL ASSISTANCE
forPolk County Area Fire/Rescue Services

By authorized signature of this Agreement, Parties agree to the 28E Agreement for Mutual Assistance for Polk County Area Fire/Rescue Services.

Effective Date: January 1, 2017

Legal Name of Jurisdiction: City of Elkhart Iowa

mayor
Jurisdiction Official

12-12-16
Dated

Jeanne Uhl City Clerk
Attest

12-12-2016
Dated

Chief Mathis
Chief/Director

12-12-2016
Dated

28E AGREEMENT FOR MUTUAL ASSISTANCE
for Polk County Area Fire/Rescue Services

By authorized signature of this Agreement, Parties agree to the 28E Agreement for Mutual Assistance for Polk County Area Fire/Rescue Services.

Effective Date: January 1, 2017

Legal Name of Jurisdiction: City of Granger, Iowa

Cathy S. Fuson — Mayor — 12-14-16
Jurisdiction Official — Dated

Kristy Tyson — City Clerk — 12/14/16
Attest — Dated

Jarrod Ehrhardt — Fire Chief — 12-14-16
Chief/Director — Dated

28E AGREEMENT FOR MUTUAL ASSISTANCE
for Polk County Area Fire/Rescue Services

By authorized signature of this Agreement, Parties agree to the 28E Agreement for Mutual Assistance for Polk County Area Fire/Rescue Services.

Effective Date: January 1, 2017

Legal Name of Jurisdiction: City of Grimes

Jurisdiction Official Thomas M. Armstrong — Dated 11/22/16

Attest Rochelle Williams, City Clerk — Dated 11/22/16

Chief/Director Jim Clark — Dated 11/22/16

28E AGREEMENT FOR MUTUAL ASSISTANCE
for Polk County Area Fire/Rescue Services

By authorized signature of this Agreement, Parties agree to the 28E Agreement for Mutual Assistance for Polk County Area Fire/Rescue Services.

Effective Date: January 1, 2017

Legal Name of Jurisdiction: City of HARVEY

Dion J. Lubert Mayor — Jurisdiction Official — 12/05/16 — Dated

Bonnie Geary — Attest — 12/05/16 — Dated

Charles W Eram — Chief/~~Director~~ — 12-5-16 — Dated

28E AGREEMENT FOR MUTUAL ASSISTANCE
for Polk County Area Fire/Rescue Services

By authorized signature of this Agreement, Parties agree to the 28E Agreement for Mutual Assistance for Polk County Area Fire/Rescue Services.

Effective Date: January 1, 2017

Legal Name of Jurisdiction: City of Indianola

Jurisdiction Official — Mayor — 11.21.16 Dated

Attest — City Clerk — 11.21.16 Dated

Chief/Director — 11-28-16 Dated

28E AGREEMENT FOR MUTUAL ASSISTANCE
for Polk County Area Fire/Rescue Services

By authorized signature of this Agreement, Parties agree to the 28E Agreement for Mutual Assistance for Polk County Area Fire/Rescue Services.

Effective Date: January 1, 2017

Legal Name of Jurisdiction: City of Johnston

Jurisdiction Official — Dated 12/5/16

Attest — Dated 12/5/16

Chief/Director — Dated 12-7-16

28E AGREEMENT FOR MUTUAL ASSISTANCE
for Polk County Area Fire/Rescue Services

By authorized signature of this Agreement, Parties agree to the 28E Agreement for Mutual Assistance for Polk County Area Fire/Rescue Services.

Effective Date: January 1, 2017

Legal Name of Jurisdiction: City of Knoxville, IA

Jurisdiction Official — Dated 12-8-16

Attest — Dated 12-8-16

Chief/Director — Dated 12/8/16

28E AGREEMENT FOR MUTUAL ASSISTANCE
for Polk County Area Fire/Rescue Services

By authorized signature of this Agreement, Parties agree to the 28E Agreement for Mutual Assistance for Polk County Area Fire/Rescue Services.

Effective Date: January 1, 2017

Legal Name of Jurisdiction: Lake Prairie Fire Service

Rob Van Soel Clerk — Jurisdiction Official — December 12, 2016 — Dated

Attest — 12/12/16 — Dated

Chief/Director — 12-12-16 — Dated

28E AGREEMENT FOR MUTUAL ASSISTANCE
for Polk County Area Fire/Rescue Services

By authorized signature of this Agreement, Parties agree to the 28E Agreement for Mutual Assistance for Polk County Area Fire/Rescue Services.

Effective Date: January 1, 2017

Legal Name of Jurisdiction: City of Marshalltown

James L Lowrance
Jurisdiction Official — Dated 12/15/2016

Shari L Coughenour
Attest — Dated 12/15/2016

David Rinn
Chief/Director — Dated 12/15/2016

28E AGREEMENT FOR MUTUAL ASSISTANCE
for Polk County Area Fire/Rescue Services

By authorized signature of this Agreement, Parties agree to the 28E Agreement for Mutual Assistance for Polk County Area Fire/Rescue Services.

Effective Date: January 1, 2017

Legal Name of Jurisdiction: Maxwell, Story County, Iowa

Jurisdiction Official — Dated 12/6/16

Attest — Dated 12/6/16

Chief/Director — Dated 12-6-16

28E AGREEMENT FOR MUTUAL ASSISTANCE
for Polk County Area Fire/Rescue Services

By authorized signature of this Agreement, Parties agree to the 28E Agreement for Mutual Assistance for Polk County Area Fire/Rescue Services.

Effective Date: January 1, 2017

Legal Name of Jurisdiction: City of Mingo

X Mayor Butler
Jurisdiction Official

X 12/16/16
Dated

Sondra Kenney
Attest

12/16/16
Dated

John R Halferty
Chief/Director

12/16/16
Dated

28E AGREEMENT FOR MUTUAL ASSISTANCE
for Polk County Area Fire/Rescue Services

By authorized signature of this Agreement, Parties agree to the 28E Agreement for Mutual Assistance for Polk County Area Fire/Rescue Services.

Effective Date: January 1, 2017

Legal Name of Jurisdiction: City of Mitchellville

Jurisdiction Official — Dated 12/19/2016

Attest — Dated 12/19/16

Chief/Director — Dated 12/30/16.

28E AGREEMENT FOR MUTUAL ASSISTANCE
for Polk County Area Fire/Rescue Services

By authorized signature of this Agreement, Parties agree to the 28E Agreement for Mutual Assistance for Polk County Area Fire/Rescue Services.

Effective Date: January 1, 2017

Legal Name of Jurisdiction: City of Nevada

Jurisdiction Official — Dated 11-30-2016

Attest — Dated 11-30-2016

Chief/Director — Dated 12-2-16

28E AGREEMENT FOR MUTUAL ASSISTANCE
for Polk County Area Fire/Rescue Services

By authorized signature of this Agreement, Parties agree to the 28E Agreement for Mutual Assistance for Polk County Area Fire/Rescue Services.

Effective Date: January 1, 2017

Legal Name of Jurisdiction: City of Newton DBA Newton Fire Department

Jurisdiction Official — Dated 12-19-16

Attest Deputy City Clerk, Cheryl Salyers — Dated 12-19-16

Chief/Director — Dated 12/21/16

28E AGREEMENT FOR MUTUAL ASSISTANCE
for Polk County Area Fire/Rescue Services

By authorized signature of this Agreement, Parties agree to the 28E Agreement for Mutual Assistance for Polk County Area Fire/Rescue Services.

Effective Date: January 1, 2017

Legal Name of Jurisdiction: Northern Warren Fire and Emergency Response Agency d/b/a Northern Warren Fire Department

Brian W Clark Fire Chief
Jurisdiction Official

01 Dec 2016
Dated

Myra Solem
Attest

12.01.2016
Dated

Roy Phillips
Chief/Director

DEC 1 2016
Dated

28E AGREEMENT FOR MUTUAL ASSISTANCE
for Polk County Area Fire/Rescue Services

By authorized signature of this Agreement, Parties agree to the 28E Agreement for Mutual Assistance for Polk County Area Fire/Rescue Services.

Effective Date: January 1, 2017

Legal Name of Jurisdiction: City of Norwalk

Jurisdiction Official — Dated 12-1-16

Attest — Dated 12-1-16

Chief/Director — Dated 12-1-16

28E AGREEMENT FOR MUTUAL ASSISTANCE
for Polk County Area Fire/Rescue Services

By authorized signature of this Agreement, Parties agree to the 28E Agreement for Mutual Assistance for Polk County Area Fire/Rescue Services.

Effective Date: January 1, 2017

Legal Name of Jurisdiction: City of Pleasant Hill, Iowa

Jurisdiction Official Sara Kurovski, Mayor — Dated 12/13/2016

Attest Dena Spooner, City Clerk — Dated 12/13/2016

Chief/Director Tom Solberg, Fire Chief — Dated 12/13/2016

28E AGREEMENT FOR MUTUAL ASSISTANCE
for Polk County Area Fire/Rescue Services

By authorized signature of this Agreement, Parties agree to the 28E Agreement for Mutual Assistance for Polk County Area Fire/Rescue Services.

Effective Date: January 1, 2017

Legal Name of Jurisdiction: City of Polk City

Jurisdiction Official — Dated 11-28-16

Attest — Dated 11-28-16

Chief/Director — Dated 11-28-16

28E AGREEMENT FOR MUTUAL ASSISTANCE
for Polk County Area Fire/Rescue Services

By authorized signature of this Agreement, Parties agree to the 28E Agreement for Mutual Assistance for Polk County Area Fire/Rescue Services.

Effective Date: January 1, 2017

Legal Name of Jurisdiction: SAYLOR TOWNSHIP

Jurisdiction Official CHAIR — Dated 12/15/2016

Attest — Dated Dec. 19, 2016

Chief/Director — Dated 12-16-16

28E AGREEMENT FOR MUTUAL ASSISTANCE
for Polk County Area Fire/Rescue Services

By authorized signature of this Agreement, Parties agree to the 28E Agreement for Mutual Assistance for Polk County Area Fire/Rescue Services.

Effective Date: January 1, 2017

Legal Name of Jurisdiction: City of Urbandale

Bob Andeweg, Mayor
Jurisdiction Official

11/22/16
Dated

Attest

Dated

Jerry Holt, Fire Chief
Chief/Director

11/22/16
Dated

28E AGREEMENT FOR MUTUAL ASSISTANCE
for Polk County Area Fire/Rescue Services

By authorized signature of this Agreement, Parties agree to the 28E Agreement for Mutual Assistance for Polk County Area Fire/Rescue Services.

Effective Date: January 1, 2017

Legal Name of Jurisdiction: City of Waukee

Jurisdiction Official — Dated 12-12-2016

Attest — Dated 12/12/2016

Chief/Director — Dated 12-13-2016

28E AGREEMENT FOR MUTUAL ASSISTANCE
for Polk County Area Fire/Rescue Services

By authorized signature of this Agreement, Parties agree to the 28E Agreement for Mutual Assistance for Polk County Area Fire/Rescue Services.

Effective Date: January 1, 2017

Legal Name of Jurisdiction: City of West Des Moines

_____, Mayor — 12/12/16
Jurisdiction Official — Dated

Ryan T. Jacobson — 12/12/16
Attest — Dated

_____, Fire Chief — 12-14-16
Chief/Director — Dated

28E AGREEMENT FOR MUTUAL ASSISTANCE
for Polk County Area Fire/Rescue Services

By authorized signature of this Agreement, Parties agree to the 28E Agreement for Mutual Assistance for Polk County Area Fire/Rescue Services.

Effective Date: January 1, 2017

Legal Name of Jurisdiction: Winnsboe Heights Fire Department

Elizabeth A Hauser
Jurisdiction Official — Dated 1/3/17

Marcia Woodke
Attest — Dated 1/3/17

Chief/Director — Dated 1/2/16

Resolution No. 2025-09

A RESOLUTION APPROVING AN UPDATED 28E AGREEMENT FOR MUTUAL ASSISTANCE FOR POLK COUNTY FIRE / RESCUE SERVICES

WHEREAS, the City of Windsor Heights (the "City") desires to enter into this 28E Agreement ("Agreement"), the purpose of which is to provide for the Emergency Services of one entity to the other in such emergency or needed situations requiring additional, special personnel, and/or equipment.

NOW THEREFORE, BE IT RESOLVED, by the City Council of the City of Windsor Heights State of Iowa, approves the 28E Agreement for Mutual Assistance for Polk County Area Fire/Rescue Services; and the Mayor, is hereby authorized and directed to execute said Agreement on behalf of the City.

Passed and Approved this 23rd day of January, 2025

_____
Mike Jones, Mayor

Attest:_____
Adam Strait, City Clerk

28E AGREEMENT FOR MUTUAL ASSISTANCE

FOR POLK COUNTY AREA FIRE/RESCUE SERVICES

By authorized signature of this Agreement, Parties agree to the 28E Agreement for Mutual Assistance for Polk County Area Fire/Rescue Services.

Effective Date: _____

Legal Name of Jurisdiction _____

_____

Jurisdiction Official Date

_____ _____

Attest Date

_____ _____

Chief/Director Date

STAFF REPORT
CITY COUNCIL
January 23, 2025

TO: CITY COUNCIL

FROM: Andy Larson

SUBJECT: Approve Purchase of Replacement CEC Tables

GENERAL INFORMATION

The tables of Community Events Center (CEC) are original to the building and are starting to show their age. Locking mechanisms have been repaired and replaced several times and defects to the edge banding and lamination are present on numerous tables. The bases of the cocktail tables have suffered deformations and don't exactly sit level and have become wobbly. The replacement of all the tables at the CEC is scheduled to take place over the next three years. The schedule of the timeframe is outlined in the Council approved ERP of the CEC and is as follows:

FY25 - **$40,000 Budgeted** - Replace one half of the round tables (qty. 10 full round tables), rectangle tables (qty. 2) and all cocktail tables including adding 2 more cocktail tables due to demand (qty. 4)

FY26 - **$20,000 Budgeted** - Replace one half of the remaining round tables (qty. 5 full round tables) and rectangle tables (qty. 2)

FY27 - **$18,000 Budgeted** - Replace the remaining round tables (qty. 5 full round tables)

Public Works Staff will save the best of the remaining tables each year until eventually the whole inventory is replaced as new. The tables being replaced will be listed as a lot (sold all together) for auction in each respective year on GovDeals, which is the City's current method of disposing of surplus property. The round tables are sold in "half-rounds" - ie, one full table is two halves. The quantities on the attached estimate for the round tables reflect this. 20 half rounds make 10 full round tables.

Summary:
Public Works staff solicited 3 estimates as part of the table replacement of the CEC. All quotes received priced out the exact tables of what is currently in the building and will match old and

new. It is the recommendation of Public Works staff to purchase the scheduled replacement of 10 round tables, 2 rectangular tables and 4 cocktail tables from Pigott at the price of $36,738.50.

ATTACHMENTS

1. Pigott CEC Table Estimate

PIGOTT

Windsor Heights Community Center
Hi5 Tables
01/10/2025

10:34:59AM
Friday, January 10, 2025

Qty	Product	Sell Price Unit	Extended
HALF-ROUND NESTING TABLES			
20	**SPT1367229HRN.L3** Supreme Nesting Table With "T" Bases on locking casters for soft-floors. 36 x 72x 29 high, "Half-Round" shaped HPL top with a PVC edge. Top & Edge Color: Wilsonart Monticello Maple #7925-38 I Matching PVC edge Base Finish: Black (BK)	$1,470.00	$29,400.00
RECTANGLE NESTING TABLES			
2	**SPT1367229REN.L3** Supreme Nesting Table with "T" bases on locking casters for soft-floors. 36 x 72 x 29 high, Rectangle HPL top with a PVC edge. Top & Edge Color: Wilsonart Monticello Maple #7925-38 I Matching PVC edge Base Finish: Black (BK)	$1,305.00	$2,610.00
ROUND HIGH-TOP TABLES			
4	**SPX13042RDS.L3** Supreme Table with "X" base on levelers. 30 diameter x 42 high, HPL Round top with PVC edges. Top & Edge Color: Wilsonart Monticello Maple #7925-38 I Matching PVC edge Base Finish: Black (BK)	$675.00	$2,700.00
xSERVICES			
1	**Install** Installation Services	$1,528.50	$1,528.50
1	**UCE** Upcharge for non standard PVC edge band	$500.00	$500.00

Total Sell: $36,738.50

Total: $36,738.50

Authorized Signature:_____ Date:_____

**** A purchase order or approved signature is required to process this order for the above products and services. The products are manufactured per your specifications and are NOT REFUNDABLE. All applicable sales tax will apply.*

"The ideas and concepts contained in this document are the exclusive property of Pigott and MillerKnoll and cannot be reproduced or distributed without express written consent."

PIGOTT

Terms and Conditions of Sale (Furniture)

All terms and conditions described herein are understood to constitute material terms and conditions upon which the prices offered by Pigott, Inc. (hereinafter "Pigott") are expressly conditioned. Any attempt to remove, alter, invalidate, amend, or nullify these terms and conditions from any future or subsequent contract shall be deemed invalid or void, unless Pigott is provided specific additional consideration for such removal, alteration, nullification, or amendment.

If any clause or provision of these Terms and Conditions of Sale is determined to be illegal, invalid, or unenforceable by a court of competent jurisdiction, the remainder of the Terms and Conditions of Sale shall not be affected thereby and shall remain in full force and effect.

Purchase of Product & Provision of Services

This Agreement for the purchase of product and the provision of services must be submitted by Buyer to Pigott before Pigott can place production orders to the appropriate manufacturers for any furnishings and finish materials.

Customer retains Pigott to perform, and Pigott agrees to perform services for Buyer. Pigott shall use its best efforts in the performance of the Services.

It is agreed and understood that Pigott's relationship to Buyer is that of an independent contractor. Neither party will be deemed to be a partner, agent, employee, or joint venture of the other party.

Cancellation & Changes

In the event this proposal is accepted by the Buyer, it is understood and agreed that it cannot be canceled or modified. Upon authorized signature and/or purchase order, product cannot be canceled, modified, returned, or refunded.

Billing & Payment Terms

For existing commercial customers and new commercial customers that have completed a new client application, a deposit of 50% will be required for all orders over $10,000. Order(s) will be placed upon receipt of deposit payment. Remaining balance of product and related services will be billed upon substantial completion of project and will be due 15 days from the date of the invoice.

All personal orders will be required to pay 100% prior to order placement.

If Buyer delays delivery beyond originally agreed-upon installation date, and Pigott or Buyer has received product, Buyer will be billed for 90% of total sale price on the originally agreed upon installation date. The remaining 10% of the total sale price will be billed upon product delivery/installation. In addition, if Buyer delays delivery of product beyond 15 days of original agreed-upon delivery/installation date, Buyer will be assessed storage fees.

Security Interest

To secure payment of obligations of Buyer to Pigott for goods provided to Buyer, including interest, late payment fees, and collection costs (collectively, the "Obligations"), Buyer hereby grants to Pigott a security interest (as that term is defined in Article 9 of the U.C.C. as enacted in Iowa) in all goods sold by Pigott, whenever and by whomever delivered, directly or indirectly, to or for the benefit of Buyer, wherever located, now owned and hereafter acquired, and all proceeds from the sale or other disposition of the foregoing

"The ideas and concepts contained in this document are the exclusive property of Pigott and MillerKnoll and cannot be reproduced or distributed without express written consent."

(collectively the "Collateral"). Pigott's security interest attaches at the time of Buyer's receipt of goods. The security interest granted hereunder shall constitute at all times a valid first priority security interest vested in Pigott in and upon all of the Collateral pursuant to Section 9 of the U.C.C. and shall not become subordinate or junior to the security interests, liens, encumbrances or claims of any other person, firm or corporation, including the United States or any department, agency or instrumentality thereof, or any state, county or local governmental agency.

Maintenance and Repair

All furniture is guaranteed according to manufacturer's published warranty. NO WARRANTIES OTHER THAN THE MANUFACTURER'S PUBLISHED WARRANTY APPLY. PIGOTT EXPRESSLY DISCLAIMS ANY AND ALL OTHER WARRANTIES, WHETHER WRITTEN OR ORAL, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY WARRANTY OF QUALITY, MERCHANTABILITY, OR FITNESS FOR A PARTICULAR PURPOSE.

Non-warranted repairs and maintenance will be billed at the then-current market rate, including but not limited to, trip charge(s) and applicable materials charges.

Insurance

Pigott agrees to furnish insurance for products stored in our facilities or in transit in our trucks. Buyer agrees to provide insurance coverage for product at Buyer's location, including work-in-progress, stored material and installed products.

Scope of Work Changes/Change Order Process

Pigott will accept scope change requests that are submitted in writing and signed by both Pigott and Buyer. Changes submitted after final plan approval which result in additional work will be billed consistent with current unit pricing, plus for other costs, including but not limited to design services and labor at the current market rate, trip charge(s) and applicable materials charges. Buyer also agrees to an extension in any identified or existing schedule, commensurate with any delays in product delivery caused by the changes.

Design Services

Pigott shall use commercially-reasonable efforts to ensure that all deliverables are designed to comply with applicable rules, codes and regulations, such as the Americans with Disabilities Act ("ADA"). Notwithstanding, Buyer acknowledges and agrees that Pigott is not a licensed design professional and makes no representations, warranties, or covenants in connection with such rules, codes or regulations. The compliance of deliverables with any such rules, codes or regulations shall be the responsibility of Buyer.

Drop Shipments

For any products shipping directly from manufacturer, without contracting Pigott for receiving or installation services, it will be Buyer's responsibility to receive, inspect and note any damages or shortages on the bill of lading at the time of receipt. Damages or shortages must be reported to Pigott within 48 hours of delivery so the appropriate claim may be filed. Buyer agrees that failure to notify Pigott of any damages or shortages within this time period shall operate as a waiver of any and all claims, rights, or remedies arising out of the alleged damages or shortages.

"The ideas and concepts contained in this document are the exclusive property of Pigott and MillerKnoll and cannot be reproduced or distributed without express written consent."

Delivery and Installation
Seller will inform Buyer of an estimated date of delivery when seller receives an estimated shipping date from its supplier or manufacturer. The estimated delivery date is not a guaranteed delivery date. Buyer recognizes and acknowledges that the Estimated Delivery Date is merely an estimate and is subject to change.

If delivery and/or installation services are requested as part of the proposal, the following provisions apply:

1. **Ship-To Location:**
   When delivery changes from agreed upon site to an alternate receiving location, additional pricing considerations related to labor, travel or other associated fees may apply.

2. **Condition of Job Site:**
   The job site must be ready to accept furniture with construction complete (ceiling grid and tile in, wall covering/paint done, carpet and baseboard finished, electrical/data work done, etc.) and the space free of trades (punch list trades only), as well as clean and free of debris. Adequate facilities for off-loading, staging, moving, and handling of merchandise shall be provided.

   Unfinished Space:
   If the space is not complete and ready for furniture, the Buyer agrees to pay any and all charges Pigott incurs as extras due to double-handling, delay in work progress, offsite storage and additional cleaning.

   Hold-To Dimensions:
   When plans are provided by Buyer/Owner, architect or contractor, Buyer is responsible for providing accurate plans. When furniture solutions require a hold-to dimension, Pigott will provide critical dimensions. Deviations of noted hold-to dimensions are not the responsibility of Pigott.

   Electrical/Plumbing/Voice Data:
   Buyer is responsible for providing licensed electrician to hardwire furniture power in-feeds to the building's power source, as well as purchasing the necessary electrical conduit, boxes, receptacles, and voice/data faceplates for installation into the furniture. Pigott will provide the power in-feeds unless noted. Electrical contractor is responsible for cutting and/or replacing ceiling tiles for power poles. Buyer is responsible for purchasing, coordinating, and installing all wire mold and fixtures, (I.E., plumbing, valves, sink units, eye washes, and showers).

   Electrical Hookup:
   Hardwiring of electrical is not included and must be supplied by a licensed electrician.

3. **Job Site Service:**
   Electrical current, heat, hoisting and/or elevator access will be provided by Buyer without charge to Pigott. Adequate facilities for off-loading, staging, moving, and handling of merchandise shall also be provided by Buyer.

"The ideas and concepts contained in this document are the exclusive property of Pigott and MillerKnoll and cannot be reproduced or distributed without express written consent."

PIGOTT

4. **Delivery Hours:**
   Delivery to or receiving of product at the job site will be made Monday - Friday, 7:00 AM - 3:30 PM unless otherwise specifically agreed upon. Overtime work performed at Buyer's request will be billed at overtime rates.

5. **Damage:**
   After product delivery to Buyer's location, loss, or damage by weather, outside contractor/trades, by fire or other element shall be the responsibility of the Buyer, and the Buyer agrees to hold Pigott harmless from any such loss.

6. **Cleaning:**
   Pigott will provide a single wipe-down, dusting, and vacuuming of the installed furniture/area upon installation completion, prior to punch-out/walk-through. Subsequent cleanings will be the responsibility of the Buyer.

Liability:
In no event will Pigott be held responsible for special or consequential damages arising from, connected with, or incidental to, the sale or services provided. Liability of Pigott to Buyer for any and all claims, damages, losses, expenses, or cause of action shall, in the aggregate, not exceed the amounts actually paid by Buyer for the sale and/or services from which the claims arise or to which the claims are related.

Interest, Fees, and Costs:
Buyer agrees that Pigott shall be entitled to recover all costs incurred in enforcing any provision of these Terms and Conditions of Sale, including court costs and attorney's fees. Pigott shall also be entitled to collect interest on any amounts due and outstanding to Pigott, under any applicable statutory provision and then-current rate of interest.

Time for Commencing Action:
Buyer expressly agrees that the statute of limitations for any claim whatsoever arising from or related to the sale or services provided shall be two years from the time the cause of action accrues. This provision shall not serve to modify any applicable statute of repose.

General Acknowledgment
By signing below, Buyer acknowledges that the terms and conditions contained in this document have been fully read and are understood. Furthermore, the Buyer agrees that these terms and conditions are the basis of the current and future business transactions between the Buyer and Pigott. These terms and conditions supersede and replace all prior and contemporaneous agreements, negotiations, representations, and warranties. These terms and conditions cannot be modified except by written agreement signed by both Buyer and Pigott.

Buyer's Company Name _____

Authorized Signature _____

Date _____

"The ideas and concepts contained in this document are the exclusive property of Pigott and MillerKnoll and cannot be reproduced or distributed without express written consent."

STAFF REPORT
CITY COUNCIL
January 23, 2025

TO: CITY COUNCIL

FROM: Adam Plagge, City Administrator

SUBJECT: Consideration of Resolution No. 2025-06 - A Resolution Authorizing The City To Submit To The Us Department Of Transportation A Rebuilding American Infrastructure With Sustainability And Equity (RAISE) Grant Application & Commitment To Fund 20% Of The Project

GENERAL INFORMATION

City staff has participated in a Department Of Transportation Feedback session on the 2024 RAISE Grant Application and been working closely with BMI and the MPO to substantially revise and strengthen the 2025 73rd St. RAISE Grant Application due at the end of January.

Changes to the 2025 application include the addition of a pedestrian bridge over Walnut Creek near Center St. The City of Des Moines and West Des Moines have both agreed to contribute $25,000 to the pedestrian bridge, subject to receipt of the RAISE Grant. The combination of their participation and creation of alternative pedestrian transportation option will serve to strengthen the application. Administration's opinion after speaking with the DNR and other organizations is the cost/benefit of the pedestrian bridge warrants its inclusion despite several unknowns regarding its cost, design and specific location at this time.

Other smaller changes to the application include collection of pedestrian data along the railroad tracks, addition of traffic camera synchronization, pavement sensors, commitment to using some more environmentally friendly materials, and inclusion of additional public input through the MPO's Comprehensive Safety Action Plan process.

One application factor outside of the City's control is that the project is not within a designated historically disadvantaged population area, which is one important factor considered in making awards.

This Resolution commits the City to funding at least 20% ($4,214,000) of the 73rd St. reconstruction project, if the grant were received. The tentative timeline for the project is 2030-2031.

ATTACHMENTS

1. Resolution No. 2025-06 - Raise Grant Application
2. DRAFT Combined RAISE Grant Submission Documents

RESOLUTION NO. 2025-06

A RESOLUTION AUTHORIZING THE CITY TO SUBMIT TO THE US DEPARTMENT OF TRANSPORTATION A REBUILDING AMERICAN INFRASTRUCTURE WITH SUSTAINABILITY AND EQUITY (RAISE) GRANT APPLICATION & COMMITMENT TO FUND 20% OF THE PROJECT

WHEREAS, the US Department of Transportation (DOT) established the Rebuilding American Infrastructure with Sustainability and Equity (RAISE) Grant Program and has announced funding availability under said Program for transportation infrastructure grants; and

WHEREAS, the City is an eligible applicant with a proven track record of successfully implementing Federal funding from the DOT; and

WHEREAS, the project total for the 2025 application is estimated at $21,070,000 dollars, of which the City is proposing a RAISE grant of up to $16,856,000; and

WHEREAS, the City is proposing utilizing local funding and matching funds to support a minimum of 20% ($4,214,000) of the project to ensure a competitive application; and

WHEREAS, the City Council has reviewed the request and found it to be in the best interest of the City.

NOW, THEREFORE, BE IT RESOLVED BY THE COUNCIL OF THE CITY OF WINDSOR HEIGHTS, IOWA:

Section 1. The City staff and Mayor is hereby authorized to prepare and submit a Rebuilding American Infrastructure with Sustainability and Equity (RAISE) Grant Program application for $16,856,000; and

Section 2. The Council hereby authorizes staff to accept the award if granted and sign necessary agreements to execute an award.

Passed and Approved this 23rd day of January, 2025.

_____
Mike Jones, Mayor

_____
Adam Strait, City Clerk

Executive Summary

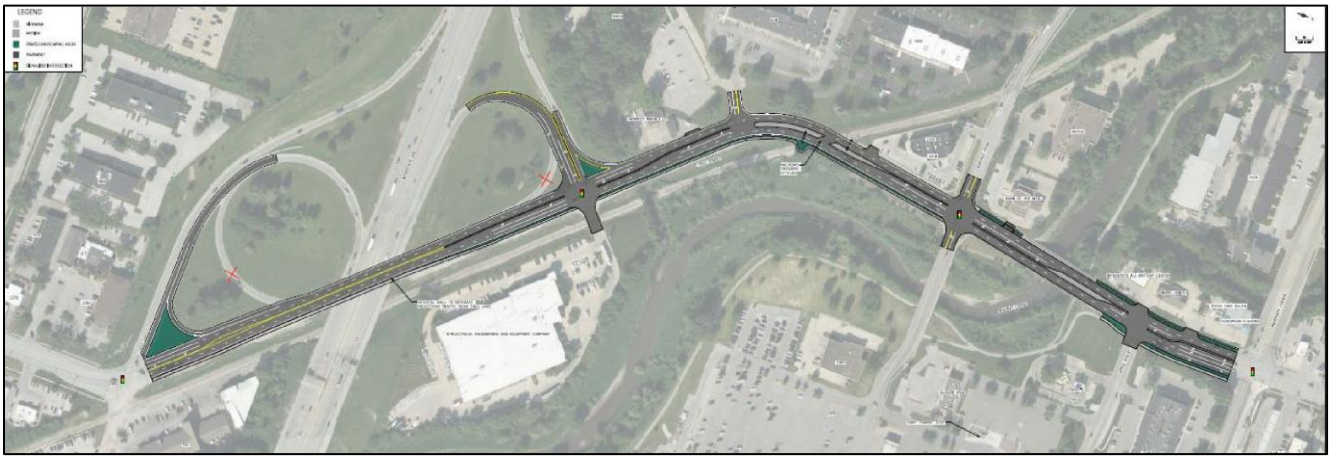
Upon successful award of this grant application, the City of Windsor Heights will fill in a critical gap within the pedestrian network along 73rd Street underneath Interstate-235 and improve safety for both roadway users and vulnerable road users. The RAISE grant opportunity comes at a moment when political will and roadway conditions are most timely to complete this task. The Project proposed within this grant application addresses three main challenges:

1. Lack of safe connections for non-motorists between the North and South sides of I-235
2. A roadway that is not designed to handle the current traffic volumes and speeds along the corridor
3. Design constraints caused by the I-235 bridge and a rail line adjacent to the corridor

The Project solves these challenges through the following design elements:

1. Reallocation of roadway space to include critical pedestrian facilities along 73rd street with added protection to vulnerable road users
2. Safety improvements to the roadway with by correcting roadway curvature, including crossing arms and warning lights to warn drivers of oncoming trains, and the realignment of on-and-off loop ramps to improve safety and accommodate the new pedestrian facilities
3. Installation of a pedestrian bridge South of I-235 across Walnut Creek to facilitate additional opportunities for pedestrians and cyclists to safely cross the physical barrier imposed by I-235 and more easily access regional trail networks

The total estimated cost for all project elements within this application is $21,070,000. The City of Windsor Heights is requesting $16,856,000 from the U.S. DOT and FHWA via the RAISE Program. The City of Windsor Heights is committed to a 20% financial match totaling $4,214,000.



Project Description

Overview

The City of Windsor Heights, Iowa is a suburban community with a population of 5,252 located within the Greater Des Moines Area. While relatively smaller than the communities surrounding it, thousands of residents from surrounding communities rely on it for daily access to amenities, goods, and jobs. Windsor Heights also provides access to wider regional transportation networks via I-235, public transit pick-ups and drop-offs, and regional trail access.

73rd Street is a minor arterial road that bridges the cities of West Des Moines to the South and Clive to the North through Windsor Heights. The proposed 73rd Street Multimodal Connector Project in this grant application is located within Windsor Heights, Iowa and includes a segment of 73rd Street that extends from University Avenue to the north down south to Center Street at the boundary between Windsor Heights and West Des Moines.

Currently, pedestrians lack dedicated facilities along this segment of 73rd Street and are forced to walk along a narrow stretch of grass and dirt between the busy road and the Norfolk Southern/Iowa Interstate rail line. This trek culminates in the choice between crossing 73rd street with no crossing aid, or to continue along the East side of 73rd street and hike across a rail bridge that crosses Walnut Creek. With either choice, the trek presents a health and safety hazard that is only exacerbated by poor lighting on the northbound side of the road, a deteriorating roadway surface, rail line crossings providing inadequate warning for drivers and pedestrians along 73rd Street, and a roadway designed for significantly slower traffic than the posted speed limit.

The City applies for FY25 RAISE (Rebuilding American Infrastructure with Sustainability and Equity) to address these concerns and ensure considerably safer networks for all road users in the area. The proposed Project reconfigures approximately 1.67 miles of the road from Center Street to Buffalo Road and enhances signalization at key intersections throughout this corridor. The Project introduces crucial pedestrian facilities along the roadway with concrete barriers. Finally, the Project will include the construction of a pedestrian bridge accessible via Center Street across the parallel Walnut Creek to conveniently connect residents to the regional trail network and nearby amenities and jobs.

Design Elements

Current roadway space underneath the I-235 bridge is fully utilized by 73rd Street, and no room exists to add a sidewalk today. Bridge reconstruction to create space for a sidewalk would be incredibly costly and would cause substantial impacts to the busiest road in Iowa (I-235 in this area has an AADT of 116,000). The owners of the adjacent railroad have been approached about providing space for a sidewalk and have not been willing to do so. The City proposes including



Figure 1 *Project Location*

pedestrian infrastructure within the existing footprint of the roadway (**Figure 1)** as the best means to solve the challenges within the Project area.

The 73rd Street Multimodal Connector presents an innovative approach to reallocate roadway space to include this critical pedestrian facility and is the only viable way to provide this connection proposed to date. At the interchange with I-235, the loop ramp connecting 73rd Street southbound to the I-235 eastbound on-ramp would be realigned closer to the intersection of 73rd Street and Center Street. This ramp/lane realignment is consistent with Iowa DOT's Des Moines Metropolitan Area Integrated Corridor Management (ICM) which includes future ramp metering in this area. The existing westbound off-ramp loop will be removed, so vehicles accessing 73rd Street southbound will navigate the existing loop and turn at the existing signal instead of being channeled into a weaving lane.

The space currently occupied by this weaving lane will instead be utilized by a new eight-foot sidewalk and a concrete barrier to ensure pedestrian safety as shown in **Figure 2**. High visibility pedestrian crosswalk markings will be implemented at all intersections to provide a safer crossing environment and warn drivers that pedestrians could be in the area.

Currently, the intersection of 73rd Street and the Norfolk Southern/Iowa Interstate railroad has substandard horizontal curvature and poor protections for the rail crossing. At present, the roadway "squeezes in" at the crossing, quickly dropping the median and narrowing travel lanes. This transition also uses substandard roadway curves with a 25mph design speed on the southbound lanes. This project will correct this curvature and will install a raised median between the two directions of travel. Additionally, crossing arms will include warning lights to signal oncoming trains. With the installation of a raised median, one gate arm will be placed on the shoulder of the road and the other will be placed within the median. Currently, the overhead warning lights on the east side of the road (used to signal northbound vehicles on 73rd Street) are missing due to recent damage. This creates a dangerous situation where travelers in the inner northbound travel lane cannot see the warning lights when a larger vehicle blocks them and may erroneously attempt to cross the railroad while a train is on approach. The overhead light assembly is difficult to replace due to

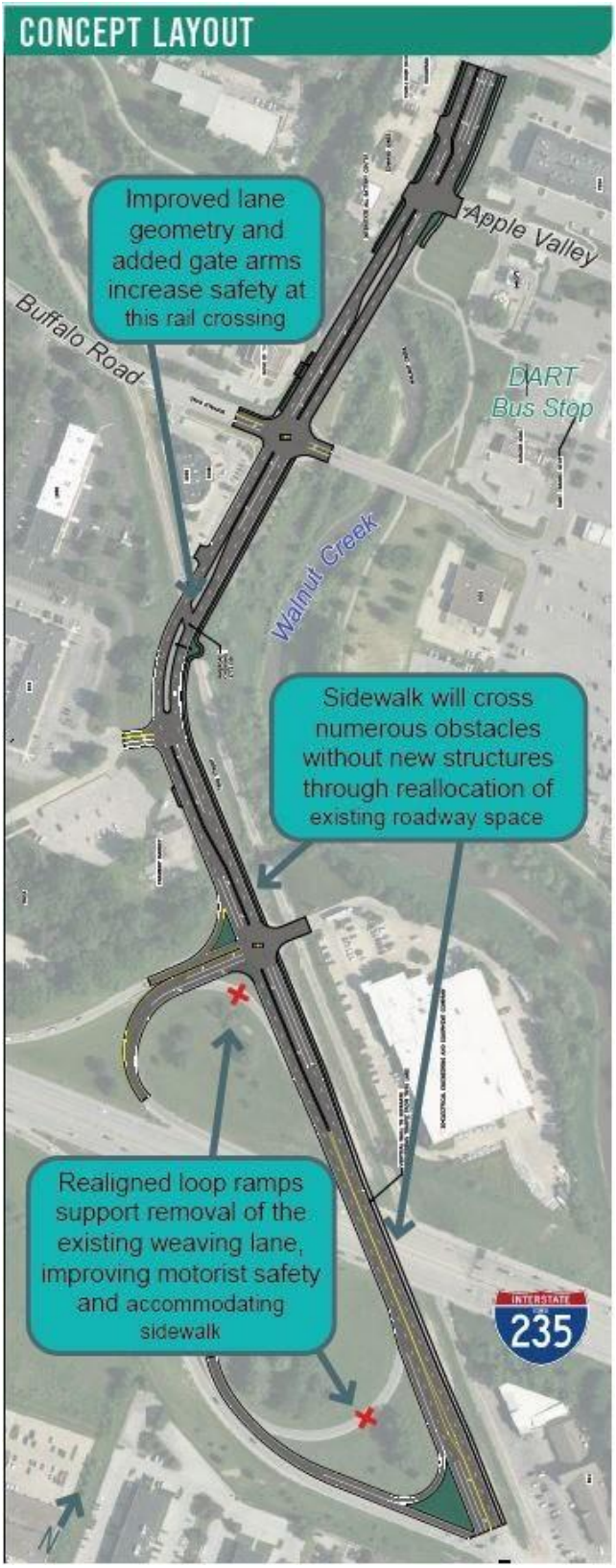


Figure 2 *Conceptual Layout of the New Roadway Design*

non-standard size. Gate arms will provide standardized, improved safety at this location for all roadway users.

Once the sidewalk reaches Buffalo Road, pedestrians can either travel east on an existing sidewalk along Buffalo Road to directly access the Clive Greenbelt Trail or can cross 73rd Street to continue north on an existing sidewalk on the west side of 73rd Street. By crossing I-235 and the Norfolk Southern/Iowa Interstate railroad, pedestrians will be able to safely access transit, recreations, retail, employment, and other amenities.

In addition, the Project will include the construction of a pedestrian bridge across Walnut Creek on the south side of I-235 (**Figure 3**). The City of Windsor Heights previously hired a consultant in 2019 to perform a hydrological study of Walnut Creek in this area to determine the best location for a pedestrian bridge to connect pedestrian access along Center Street to the existing trail network on the East side of the creek with a bridge crossing the waterway. The pedestrian bridge will be engineered such that there are no or minimal impacts on the rise of Walnut Creek.

The City anticipates that the pedestrian bridge will allow for redundancy in terms of pedestrian access through the I-235 barrier at this location which in turn will provide added safety benefits and reduce the risk of conflict between pedestrians and cyclists navigating

the area.

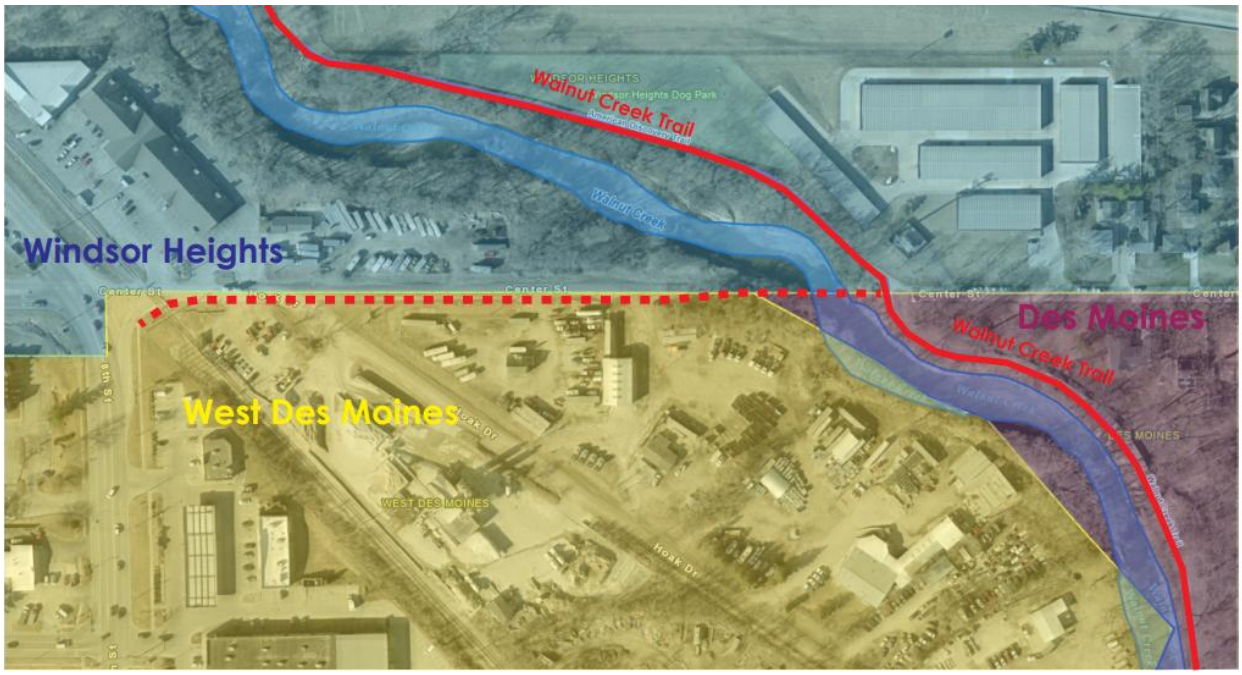


Figure 3 *Connection to Trail Network via Center Street Across Walnut Creek*

Demographic

The population of Windsor Heights is made up of eighty-eight percent of residents who identified as White, six percent as Hispanic or Latino, two percent as Asian, and one percent as Black or African American based on the Climate and Economic Justice Screening Tool (CEJST). Per the 2020 Census, almost nine percent of the 18-64 age group lives below the poverty line and twenty-seven percent of all residents are renters. The Northwest portion of the project shares a border with a Historically Disadvantaged Community (CEJST Tract number 19153011205). No Areas of Persistent Poverty will be affected by this project. Also, according to the USDOT's

Figure 4 *Low Income Tracts Surrounding Project Area*

classification, they are highlighted in the US EPA's Environmental Justice Screening tool for being in the eightieth to ninetieth percentile of low-income residents (see **Figure 4)**.

The project is located within 2010 and 2020 Census Tract 112.01. A short piece of the project is also along edge of Tract 111.12. The largest commercial center in Windsor Heights is adjacent to the corridor, I-235 and 73rd Street. This center has Sam's Club and Walmart as anchor stores with various businesses in the out lot. According to data acquired from the Greater Des Moines Partnership, these anchor stores attracted a combined total of 4.8 million visitors from November 1, 2023 through October 31, 2024, millions of which reside in the greater Des Moines area.

The commercial center's parking lot houses a DART bus stop that serves three routes: the 3, 74, and 96. This stop is one of the busiest in the entire system, and is the busiest outside of Downtown Des Moines, with 120 average boardings per day according to DART. This area also has access to the Clive Greenbelt Trail which connects to two popular trail systems, the Bill Riley Trail and Great Western Trail.



Corridor Challenges

Challenge 1: Lack of safe connections for nonmotorists between the North and South side of I-235

• Safety issues for pedestrians, including a gap in connections on the segment, discourage walking and biking.
• This corridor connects various residential communities to commercial centers. Well-connected sidewalk networks exist on either side of I-235 but are not connected to each other.
• Most intersections do not have any pedestrian crosswalk markings.

Challenge 2: Roadway is not designed to handle the current traffic volumes and speeds the roadway is experiencing

• The radius of the curve near the intersection with Center Street on the segment presents unsafe conditions for motorists.
• 73rd Street and the Norfolk Southern Railway crossing does not have safety arms although it is a four-lane street.
• While the roadway has a posted speed limit of 35mph, in some areas, the current roadway is designed to support 25mph or 30mph travel.

Challenge 3: Existing I-235 bridge constrains new roadway designs
• Underpass space is limited as traffic lanes, utilities, and the railroad share space.
• Large volumes of traffic necessitate multiple lanes.
• Existing auxiliary lane between ramps is substandard.

Outcomes of Addressing Corridor Challenges

Safety:

- The Project protects non-motorized travelers from safety risks associated with the complete lack of sidewalks which force them to walk along dangerous stretches of roadway and difficult crossings
- The Project seeks to reduce fatalities and serious injuries in an area that is considerably above the statewide average

Environmental Sustainability:

- A modal shift from single-occupancy vehicles to increased access to active transportation and public transportation options will support sustainable transportation goals in the region and reduce dangerous GHG emissions

Quality of Life:

- The Project increases access to affordable transportation options such as walking, cycling, and public transportation
- The Project improves quality of life by providing direct access to daily destinations via walking and cycling that previously were only accessible via vehicle or a considerably hazardous trek
- The Project improves public health by promoting walking and cycling to daily amenities and regional destinations

Mobility and Community Connectivity:

- The Project improves system-wide connectivity with access to transit
- Addresses community-identified gaps in the existing network
- Removes physical barriers for individuals and connects residents on both sides of I-235 to affordable transportation options

Economic Competitiveness:

- The Project improves travel time reliability for vulnerable road users
- The Project is anticipated to improve access to the local economy which will promote long-term economic growth and support more efficient land uses in the area due to the increased walkability

State of Good Repair:

- The Project addresses current transportation system vulnerabilities for underserved communities

- Furthermore, the Project improves existing transportation facilities and includes previously missing facilities within the existing footprint

Partnership and Collaboration:

- The Project incorporates engagement strategies with residents that considered equitable engagement with underserved communities and is also informed by the Des Moines Area MPO's Comprehensive Safety Action Plan engagement which also engaged thoughtfully with disadvantaged communities throughout the metro
- Furthermore, the Project documents support from neighboring communities, local businesses and organizations, and has garnered commitments for financial support from the cities of Des Moines and West Des Moines for the Walnut Creek Pedestrian Bridge element of the Project

Innovation:

- The Project will use recycled concrete from the existing roadway in the construction of the new roadway, and will incorporate CarbonCure into the concrete to reduce the environmental impact of the new construction
- Vaisala Xcast Sensors will be installed within the Project area to monitor real-time roadway conditions in the winter months and allow maintenance activities in the area to be more effective and efficient
- Fiber connections will be installed in the Project area and will contribute to safer signalization, as well as decreased energy and maintenance costs in the future

Eligibility

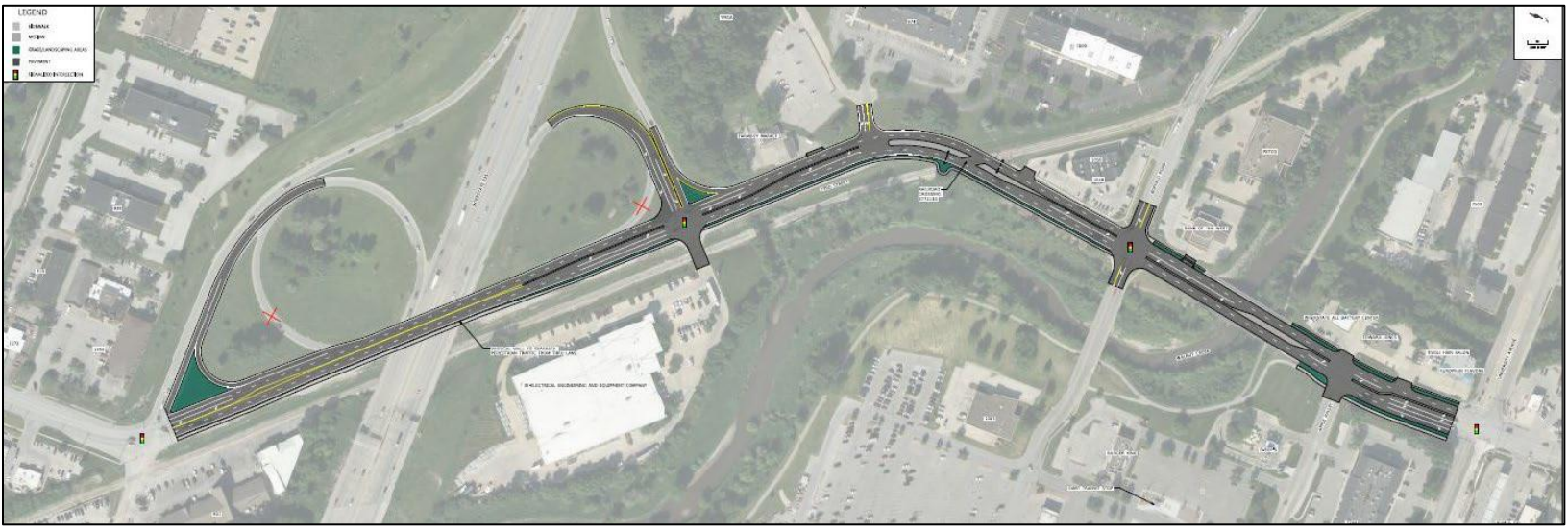
This project meets all eligibility criteria. The points below address the eligibility criteria of this application:

Eligible Applicants: As a unit of local government, the City of Windsor Heights is an eligible applicant for the RAISE capital grant opportunity. The City of Windsor Heights is the lead applicant and will manage and deliver the entirety of the project.

Minimum Funding Request for Capital Projects: The project is located in an urban area and is requesting more than the minimum request of $5 million.

Application Limit: All project components included in this application are related, and this is the only grant application submitted by this applicant.

Cost Sharing: The location for the project is Urban and is neither considered Rural, Area of Persistent Poverty, nor Historically Disadvantaged Community. The project is requesting an 80% Federal Funding match of $16,856,000 out of a total project cost of $21,070,000. Windsor Heights is resolved to provide a 20% non-Federal match of $4,214,000 and the City acknowledges responsibility for addressing any funding shortfalls and maintaining the level of non-Federal funding stated in this application.



City of Windsor Heights, Iowa 73rd Street Multimodal Connector

Merit Criteria

Rebuilding America Infrastructure with Sustainability and Equity (RAISE) Grant Application

January 2025

WINDSOR HEIGHTS

Project Merit Criteria

The City of Windsor Heights presents its proposal as being eligible for a rating of a "High Recommended' project. The proposed project would bring enormous safety benefits to a High-Risk and High-Injury corridor that connects residents from multiple jurisdictions at present only via automobile. A primary purpose of the project's improvements is to enable multimodal access to vulnerable road users that have hitherto been unable to cross the 73rd street underpass safely. Improved health, increasing use of sustainable transportation options, and easier access to daily goods and services for local residents are three of the main benefits expected to come out of the proposed improvements. The City believes that the grant proposal sufficiently addresses the required number of merit criteria to receive a rating of "Highly Recommended."

Criteria #1: Safety

Criteria #1: Safety	**HIGHLY QUALIFIED**
	Meets 2 sub-criteria
The Project… *A. Protects non-motorized travelers from safety risks* *B. Reduces fatalities and serious injuries to bring them below the state-wide average*	

1.a. Protects Non-Motorized Travelers from Safety Risks

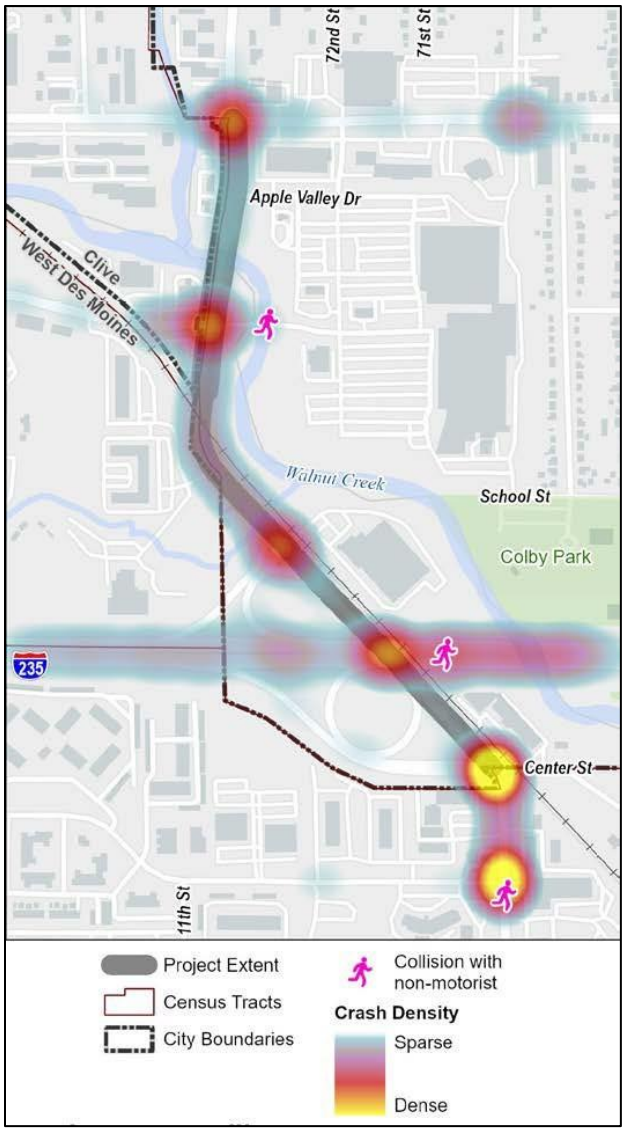


Figure 1 *A Heat Map of Historical Crashes in the Project Area from 2013-2022*

The 73rd Street Multimodal Connector project will address critical safety concerns for non-motorists that are not empowered to safely navigate the corridor at present. The corridor lacks proper pedestrian facilities, with multiple sidewalk gaps, poor crossing safety at the railroad, and substandard roadway geometry. Many pedestrians, including those from nearby low-income communities and residential areas, have little choice but to walk along dangerous stretches of the corridor without safe alternatives with a historical record of fatal repercussions (**Figure 1**). Engagement and analysis from the development of the Des Moines Area MPO's Comprehensive Safety Action Plan identified this segment as being a part of the regional High Injury Network and also the High Risk Network.

The Project will install new sidewalks and a pedestrian bridge over Walnut Creek to connect existing pedestrian networks. High visibility pedestrian crossings will be implemented throughout the corridor along all intersections. The installation of these facilities will reduce these safety risks and provide safe travel options for non-motorized users. This is particularly important given the area's high pedestrian activity. Pedestrian walkways are Proven Safety Countermeasures according to US DOT's National Roadway Safety Strategy[1].

[1] https://highways.dot.gov/safety/proven-safety-countermeasures/walkways

1.b. Reduces Fatalities and Serious Injuries to Bring Them Below the Statewide Average

The 73rd Street corridor currently experiences crash rates well above both local and statewide averages, with a 15% higher crash rate than City streets and more than double the statewide average (**Table 1**).

Table 1 Historic Crash Rates

Total Crashes in Project Area (2013-2022)	236
Average AADT 2013-2022	21,233
Crash Rate (Crashes per 100 Million Vehicle Miles Traveled)	448
Statewide Crash Rate (2013-2016, All Roads)	162
Statewide Crash Rate (2013-2016, City Streets within Incorporated Municipalities)	389

All data in the table based on data from Iowa DOT
Crash Data | Statewide Average Rates

The project aims to reduce fatalities and serious injuries by improving both roadway geometry and safety features. At the Norfolk Southern/Iowa Interstate railroad crossing, the project will enhance the roadway's curve to meet a reduced speed limit, which will help prevent crashes. Additionally, the crossing will be upgraded with new crossing gates, replacing the current warning lights, and a raised median will be added (**Figure 2**). These improvements are expected to significantly reduce the likelihood of automobile-train collisions. By addressing these safety concerns, the project will work towards bringing crash rates on the corridor below the statewide average, making the roadway safer for all users.



Figure 2 Existing (left) and Proposed Condition (right) at Rail Crossing

Criteria #2: Environmental Sustainability

Criteria #2: Environmental Sustainability	**HIGHLY QUALIFIED**
	Meets 3 sub-criteria
The Project… *A. Reduce VMT through modal shift to active transit* *B. Expands transportation-efficient land-use and design* *C. Addresses the negative environmental effects of transportation infrastructure to disadvantaged communities*	

2.a. Reduce vehicle miles traveled specifically through modal shift to transit, rail, or active transportation:

Through the Project, the City aims to reduce single-occupancy vehicle usage by providing multiple means of access to active transportation through the inclusion of sidewalks along 73rd street and a pedestrian bridge crossing that connects the South side of the 73rd street overpass to the Clive Greenbelt Trail. Lower-carbon travel modes by foot or wheel that were previously inaccessible will be enabled by the inclusion of these active transportation facilities. Furthermore, residents of the area will have expanded access to bus services provided by DART at multiple stops North of the 73rd street overpass. The City anticipates that these improvements in access to active and public transit will decrease vehicle miles traveled through the area and thus a reduction in GHG emissions as a result. In an area that is already flush with automobiles and heavy traffic, any reduction would be an improvement in traffic and environmental quality.

2.b. Implement transportation-efficient land use and design, such as drawing on the features of historic towns and villages that had a mix of land uses, compact and walkable development patterns, accessible green space, and neighborhood centers that make it convenient to take fewer or shorter trips

While a sizable portion of the area surrounding the project does not exemplify transportation-efficient land use and design, there are signs that the area's development patterns are moving in a more compact and walkable direction. The City's 2017 Comprehensive Plan names walkability and complete streets a major goal in tangent with encouraging mixed-use development. To that end the City has made progress by improving pedestrian facilities along University Avenue to the Northeast of the project area and a number of infill developments such as a new Aldi have complemented what was already a well-trafficked shopping center in the region. The City anticipates that the 73rd Street Multimodal Connector Project improvements will serve to encourage attractive, sustainable, and efficient land-uses both within Windsor Heights and in jurisdictions immediately surrounding the area. The area to the South of the project within West Des Moines' jurisdiction has already seen development that supports this notion with the construction of the Keystone on 8th, a multi-use, 42-apartment building with ground-floor commercial space.

2.c. Address the disproportionately negative environmental impacts of transportation on disadvantaged communities such as by reducing exposure to elevated levels of air, water, and noise pollution

The City of Windsor Heights is committed to pursuing initiatives aimed at growing as a diverse and inclusive community and has made it its objective to achieve equal treatment of all residents regardless of age, race, sexual orientation, or physical disability. This project will avoid adverse impacts to air and water quality as well as to wetlands and endangered species and will incur no negative environmental impacts on nearby communities.



Figure 3 *CEJST Disadvantaged Track 112.05 intersecting with and extending North of the Project area*

This project area includes many features that serve disadvantaged persons within the disadvantaged census tract within the Project area. The risks and hazards that the current state of the roadway presents to disadvantaged persons, is not providing them a safe crossing of a railroad, proper lighting for vehicles to see them as they walk along the roadway, as well as not providing a dedicated pathway for them to go to and from home, grocery stores, community events, WalMart, and especially the DART bus stop to take them to their employers. This project will address each of those system barriers and serve as a direct positive impact to the human health hazard that it currently presents.

Criteria #3: Quality of Life

Criteria #3: Quality of Life	**HIGHLY QUALIFIED**
	Meets 3 sub-criteria
The Project… *A. Increases affordable transportation options* *B. Improves access to daily destinations* *C. Improves public health*	

3.a. Increase affordable transportation choices by improving and expanding active transportation usage or significantly reducing vehicle dependence, particularly in underserved communities

This Project will benefit the community through improved street design and the elimination of dangerous exit ramps from I-235 while also enabling and promoting the use of active transportation modes and connecting residents to an expanded range of public transportation

pick-up locations. Residents who previously were forced to rely on a vehicle in lieu of attempting a dangerous trek on foot through the project area will now have multiple alternatives to walk or cycle to their desired destinations in the vicinity. Reducing the local area's reliance on single-occupancy vehicles makes the community as a whole safer and more connected for all residents.

3.b. Improve access to daily destinations like jobs, healthcare, grocery stores, schools, places of worship, recreation, or parks through transit and active transportation

As a result of this Project, residents South of the I-235 overpass over 73rd street previously unable to safely access the North side will have access to a wide range of daily destinations serving a diversity of cultural, economic, and situational needs. The connection will enable residents to safely access the The Windsor Trail which accesses hundreds of regional destinations. Nearby, residents will have quicker and safer access to Windsor Heights' Colby Park which makes further connections to the Bill Riley and Great Western Trails. Large-chain grocery and ethnic grocery stores that populate the North side of the overpass will be safely accessible to nearby residents as a result of the Project, as well as a plethora of restaurants, coffee shops, and locally owned retail establishments.



Figure 4 *A Pedestrians photographed walking along the railroad tracks adjacent to 73rd Street*

3.c. Improve public health by adding new facilities that promote walking, biking, and other forms of active transportation

The public health benefits of the Project will be realized through the encouragement of active transportation options and enhanced walkability. According to the CDC walkable communities and transportation facilities that promote walking and cycling increase physical activity and the overall quality of life. The improvements to the pavement quality within the Project area from its current PCI score of less than 25 will allow for smoother and quieter driving conditions for motorists and heavy freight, reducing the burden of noise pollution to nearby residents and businesses from what is already a loud area from the traffic on I-235.

Criteria #4: Mobility and Community Connectivity

Criteria #4: Mobility and Community Connectivity	**HIGHLY QUALIFIED**
	Meets 3 sub-criteria
The Project… *A. Improves system-wide connectivity with access to transit* *B. Addresses community-identified gaps in the existing network* *C. Removes physical barriers for individuals and reconnects communities to affordable transportation*	

4.a. Improve system-wide connectivity with access to transit, micro-mobility, and mobility on-demand

The sidewalk along 73rd street as well as the Walnut Creek trail-connection bridge will allow residents to access numerous commercial centers and make the connection to the DART bus station that serves routes 3, 74, and 96 while reducing dependence on automobiles. These connections will be enhanced with high-visibility crosswalks at all signalized intersections, connecting the new sidewalk to existing land uses and facilities on the west side of the road. When not constrained by the I-235 bridge, the sidewalk will be built farther away from the roadway and be separated from the roadway with a grassy planting strip. Currently, there is no Americans with Disabilities Act (ADA) compliant access along this roadway. The sidewalk will be built according to ADA design requirements to ensure all users can safely utilize the new transportation network.

4.b. Implement plans, based on community participation and data, that addresses gaps identified in the existing network

This project has been considered by Windsor Heights for years, warranting inclusion in the City's 2017 comprehensive plan. The 2022 West Des Moines comprehensive plan also includes reference to the barriers imposed by the road's design and included a resident's suggestion to provide a pedestrian bridge over Walnut Creek to allow for safe access. West Des Moines constructed improvements along 8th Street at the southern end of the project corridor (8th Street in West Des Moines and 73rd Street in Windsor Heights are the same roadway). The reconstruction of 73rd Street and inclusion of the Walnut Creek pedestrian bridge will continue those improvements into Windsor Heights, making for a safe, seamless pedestrian experience between the two communities.

This project is consistent with the Des Moines Area MPO's metro-wide Tomorrow Plan, a plan that guides how the Great Des Moines region will grow sustainably over the next 40 years. The project upholds Tomorrow Plan Goal 3: Further the Health and Well-Being of All Residents in the Region by filling in gaps to the sidewalk network so residents can access hubs of commerce and transportation without the use of a personal automobile.

The Windsor Heights 2017 Comprehensive Plan and its goals strongly support the 73rd Street Multimodal Connector. A few leading goals providing support for this project are:

1. Neighborhood Enhancement: Make improvements to streets and other infrastructure to enhance neighborhood quality and;
2. Complete Streets: Provide safe and peasant streets that allow travel by car, foot, or bicycle and create a connected sidewalk network, especially along arterial roads, schools, parks, trails, and retail and embrace an expansive view of "walkability" that includes creating a pleasant walking environment and encouraging mixed-use development.

The Project also implements some of the goals of The CONNECT: Central Iowa Bicycle and Pedestrian Transportation Action Plan 2020 hopes to increase the number of trips taken by foot or bicycle while decreasing the number of injury and fatalities.

Finally, the Project also addresses the forthcoming regional Comprehensive Safety Action Plan that involved substantial community outreach across the region. The Plan identifies 73rd Street as being a part of both the High Risk Network and High Injury Network through comprehensive data analysis. The segment of roadway also received multiple comments from community outreach efforts highlighting its safety issues.

4.c. Remove physical barriers for individuals by reconnecting communities to direct, affordable transportation options



The Project removes barriers to safe, easy access along 73rd street under I-235 for pedestrians and cyclists and connects them to a wider range of public transportation options on the North side of the Project area. Furthermore, the pedestrian bridge across Walnut Creek allows for nearby and easy access to the metropolitan and regional trail network that connects to the wider Des Moines area.

Figure 5 A photo of the area under I-235 along 73rd Street

Criteria #5: Economic Competitiveness and Opportunity

Criteria #5: Economic Competitiveness and Opportunity	**QUALIFIED**
	Meets 2 sub-criteria
The Project… *A. Promote long-term economic growth and other broader economic and fiscal benefits* *B. Improves travel time reliability for vulnerable road users*	

5.a. Promote long-term economic growth and other broader economic and fiscal benefits

The Project's main anticipated improvement to the local economy is expanding local residents' access to jobs and daily destinations while also improving the safety of accessing the local shopping hub. The Project expands active transportation access to local goods and services which is recognized by the US DOT as a strategy that brings a community together and generates a prosperous local economy. While the benefits to larger businesses in the area are expected to be realized, the City hopes that the Project supports local businesses that otherwise would have needed to contribute their own resources to upgrade public infrastructure which can instead be invested in the success of their own businesses. Beyond the businesses within the vicinity of the Project area, the Project will provide enhanced access to transit-dependent individuals to DART bus routes 3, 74, and 96—connecting them to economic opportunities within the region that may otherwise have been inaccessible or dangerous to access for them.

5.b. Improve travel time reliability

The Project aims to improve travel time reliability by improving road-user safety and thereby reducing the frequency of traffic incidents, as well as providing well-designed pedestrian facilities which connect users to public transit and daily destinations. The Project includes a well-designed sidewalk along 73rd street as well as a pedestrian bridge connecting the South side of the area to the already-existing trail. The combination of safety improvements to road-users with the separation of two dedicated pedestrian options reduce the likelihood of delays which may be caused by individuals sharing the road with motor vehicles. Additionally, the inclusion of proper sidewalk infrastructure—e.g. lighting, smooth surfaces—ensure that vulnerable users in the area will be able to navigate regardless of time of day and weather conditions.

Criteria #6: State of Good Repair

Criteria #6: State of Good Repair	**HIGHLY QUALIFIED**
	Meets 2 sub-criteria
The Project… *A. Addresses current transportation system vulnerabilities for underserved communities* *B. Prioritizes improvements of existing transportation facilities within the existing footprint*	

A primary goal of the Project is to bring transportation infrastructure into a state of good repair by comprehensively addressing deficiencies with utility, road-way, and streetscape assets within the existing right-of-way.

6.a. Address current or projected transportation system vulnerabilities for underserved communities

The City of Windsor Heights aims to improve multimodal connections across I-235 with this project, addressing current vulnerabilities in the transportation system. The corridor faces issues such as roadway deterioration, a lack of pedestrian facilities, and the challenges posed by a nearby aging population—18% of Windsor Heights residents are over the age of 65, according to the U.S. Census Bureau. The project will enhance the resilience of this corridor in both the short and long term, accommodating future increases in traffic and population. Specific improvements include the realignment and repaving of roadways, the update of an unsafe railroad crossing, and the construction of new walkways, all of which will enhance safety and access for all users. By addressing these vulnerabilities, the project will support more reliable and equitable transportation options for vulnerable, carless populations.

6.b. Prioritize improvement of the condition and safety of existing transportation infrastructure within the existing footprint

The project will prioritize the improvement of the condition and safety of existing transportation infrastructure within the existing footprint, focusing on areas that need immediate attention. One such area is 73rd Street, which has substandard horizontal curvature near its crossing of the Norfolk Southern/Iowa Interstate railroad. This curve will be redesigned to meet modern design standards for a 30 mph speed limit, improving both safety and traffic flow. Additionally, the railroad crossing currently equipped with only warning lights will be upgraded to include crossing gates, providing a higher level of protection for all road users. These changes will ensure that the existing infrastructure better serves the community and remains functional as traffic and population continue to grow. Even after the project's completion, the City of Windsor Heights will continue to maintain and improve the corridor to meet the needs of all road users, further strengthening the overall transportation system.

Minimal right-of-way acquisition is anticipated (approximately 0.1 acres) based on the current layout so no disruption to the community is anticipated. Right-of-way availability is also limited,

which ensures that no disruption to the community outside of typical construction activities will occur.

Criteria #7: Partnership and Collaboration

Criteria #7: Partnership and Collaboration	**HIGHLY QUALIFIED**
	Meets 1 sub-criteria
The Project… *A. Engages residents to ensure equity considerations from underserved communities are meaningfully integrated throughout the lifecycle of the project* *B. Has documented supported from local, regional, and national levels*	

7.a. Engage residents and community-based organizations to ensure equity considerations for underserved communities are meaningfully integrated throughout the lifecycle of the project

Over multiple years, residents of Windsor Heights and surrounding communities have expressed concern for the barrier that this area of 73rd Street creates for its residents. A key issue discussed at community events, such as the Windsor Wonderland held in December, 2023, was how to safely connect people and improve access to and from the community. The event attracted over 1,000 residents, providing an opportunity for attendees to learn about the project, ask questions, and offer feedback to City staff.

During Windsor Wonderland, the project board was on display (see **Figure 5)** and City staff were available to engage with residents. A QR code on the board allowed attendees to submit their feedback digitally. In addition, the City has taken additional steps to ensure they engage a diverse audience, ensuring diverse voices are heard. Project boards with the same QR codes and project details were also strategically placed at locations like an ethnic grocery store and the Walnut Creek YMCA adjacent to the project area.



Figure 5 *Project board on display at community event*

The City is committed to engaging residents throughout the process and collaborating with nearby jurisdictions whose residents will also benefitted from the Project. To that end, the Project is receiving financial support from the cities of Des Moines and West Des Moines. The City Council and staff view collaboration with nearby jurisdictions and equitable engagement as a top priority, ensuring the Project meets the needs of all resident and creates a safer, more efficient corridor into the community.

7.b. Documenting support from local, regional, or national levels

Partnering with local businesses, national businesses within Windsor Heights, neighboring communities and public figures is crucial in a project of this size. Windsor Heights representatives (staff, City Council, etc.) have discussed this project at length with many public private partners and have acquired letters of support from the following stakeholders:

- Senator Joni Ernst, Senator Charles Grassley, Senator Claire Celsi, Congressman Zach Nunn -Political representatives who see the impact this project will make for Iowa and are eager to see funding support for the project.
- City of Clive and the City of West Des Moines – Neighboring communities that will see a direct impact of the roadway project to help better connect its residents and communities to Windsor Heights amenities
- The Des Moines Area MPO – A significant regional coordinating body that has expressed its eagerness for the safety benefits to be realized through this Project
- Dowling Catholic School – A school located near 73rd Street that many of its workers and visitors use 73rd Street to access.
- DART– the Des Moines Area Regional Transit Authority is the local bus system that is located directly on 73rd Street and serves to connect people to and from workforce, housing, essential services, and recreational amenities.
- Colby Interests, Hy-Vee, Kum & Go, Wal-Mart, Walnut Creek YMCA –businesses located along or near the project site that will see the economic development opportunities this project brings once completed by bringing more people to and from their businesses.
- Clive Chamber of Commerce, Des Moines Metropolitan Planning Organization, Valley Square Owners Association, West Des Moines Chamber of Commerce – Community organizations that serve a diverse group of individuals who use 73rdStreet to attend their events/meetings

Each of these, plus many more will be key stakeholders in seeing this project completed. They will continue to be invited to participate in public participation meetings, as well as continue to help spread the word about this impactful project in Windsor Heights. A full selection of letters of support received to date can be viewed on the project website www.raisewindsorheights.com.

Criteria #8: Innovation

Criteria #8: Mobility and Community Connectivity	**HIGHLY QUALIFIED**
	Meets 3 sub-criteria
The Project… *A. Uses innovative materials* *B. Uses sensors to monitor real-time conditions of pavement quality*	

8.a. Use low-carbon or other innovative materials

The Project will use recycled concrete from the existing roadway facilities and include low carbon concrete from CarbonCure in the new pavement to reduce the amount of embodied carbon from the roadway reconstruction. CarbonCure technology in roadway reconstruction is an innovative and environmentally sustainable technique for the community. The product strengthens the material while also reducing the amount of cement needed, reducing the overall carbon footprint of the construction process.

Repainting of the roadway as well as the introduction of markings signaling pedestrian crossings will be supportive of the navigation of autonomous vehicles through the Project area. Modern roadway paintings contribute to improved lane detection, intersection navigation, and improve the overall reliability of Avs' navigation systems.

8.b. Use sensors to monitor real-time conditions of pavement quality, signage, crosswalks, transit headways, or other public infrastructure

The Project will introduce to the community Vaisala Xcast Sensors that provide real-time monitoring of roadway conditions, driver behavior in adverse winter weather conditions, and predictive technology to make maintenance actions more effective and efficient. The City will install two such sensors along 73rd Street within the Project area to monitor road conditions and make efficient use of salt inputs during the winter months as well as contribute to the safety of the roadway.

Additionally, the Project will include the installation of fiber connectivity to traffic signals within the project area and installation of McCain Monitoring to synchronize signals which will contribute to decreased energy and maintenance costs in the future. Resynchronization of the traffic signals will contribute to more efficient signal maintenance and improve safety in the area.

Benefit-Cost Analysis Narrative

Introduction

The City of Windsor Heights, Iowa is applying to the 2025 Rebuilding American Infrastructure with Sustainability and Equity (RAISE) grant program for the 73rd Street Multimodal Connector Project. The project will reconstruct approximately 1.67 miles of urban arterial street to enhance a primary corridor into the city. Once complete, the corridor will have new sidewalks and improved access to regional trails for residents of the community. Additionally, the project is anticipated to improve safety for users on the corridor and improve traffic operations at key intersections throughout the corridor.

Benefit & Cost Summary

A benefit cost analysis was completed for the proposed project using the USDOT Benefit-Cost Analysis Guidance for Discretionary Grant Programs document updated in November of 2024 and the USDOT Benefit-Cost Analysis Speadsheet Template. The proposed project is anticipated to start final design and construction activities beginning in 2025 with completion by 2030. The opening year for the project will be 2030 with an operational period of 20 years used for the analysis. Based on the anticipated outcomes of the project, the following benefits were calculated:

- Corridor Operation and Maintenance Savings
- Reduction in Vehicle Crashes
- Corridor Travel Time Savings
- Vehicle Operating Costs
- Changes in Vehicle Emissions
- Pavement Condition Improvements
- Residual Value

Capital costs were estimated for the RAISE grant submission and include costs for engineering, right-of-way, and construction activities. In the current year, capital costs are estimated at $21.07 million. The benefit cost analysis uses a 3.1 percent discount rate for future costs and benefits. A two percent discount rate is used for carbon emissions. Based on the estimated costs and benefits of the project, the estimated benefit cost ratio of the project is 4.43. The table below summarizes the costs and benefits of the project.

Category	Undiscounted Total (in millions $)	Discounted Total (in millions $)
Operations and Maintenance	3.53	1.98
Safety	20.18	12.39
Travel Time Savings	8.11	4.97
Vehicle Operating Cost Savings	0.00	0.00
Non-CO2 Emissions Reduction	-0.15	-0.09
CO2 Emissions Reduction	0.00	0.00
Pavement Condition Improvement	93.81	57.50
Residual Value	7.02	3.18
Total Benefits	**132.51**	**79.92**
Total Cost	**21.07**	**18.05**
Benefit Cost Ratio		**4.43**

Scenario Assumptions

There are two scenarios being analyzed in the benefit cost analysis a no-build scenario and a build scenario. The no-build scenario includes no changes on the existing corridor for safety or traffic operations. On-going routine maintenance and planned maintenance occurs throughout the analysis period on the corridor, but conditions remain relatively unchanged.

The build scenario includes the construction of a raised median, improve roadway alignment near the railroad crossing, a speed limit reduction to 30 miles per hour, and the installation of sidewalks along the corridor. Routine maintenance occurs throughout the analysis period to maintain the improved condition of the corridor. Traffic operations are improved through signal retiming and fiber connectivity between signals on the corridor.

Traffic volumes for the no-build and build scenarios do not change as the facility does not significantly change in function, land use, or capacity between the scenarios. The Des Moines Area MPO travel demand model was used to develop annual traffic volumes on the corridor with forecasted growth between 2030 and 2050.

Benefit Descriptions

This section outlines in more detail the data used to estimate the benefits of the 73rd Street Multimodal Connector Project.

Operations and Maintenance

Operation and maintenance costs for the 73rd Street corridor were prepared by the City of Windsor Heights on-call consultants for the years 2021 to 2050. In the no-build scenario, the cost of maintenance is greater and more frequent due to the existing condition of the street. In the

build scenario, maintenance costs are lower and do not start until 10 years following construction completion as the reconstruction project improves the condition of 73rd Street.

	Undiscounted Total (in millions $)	Discounted Total (in millions $)
Operations and Maintenance	3.53	1.98

Safety

Crash data for 2020 to 2024 was gathered from the Iowa DOT Iowa Crash Analysis Tool (ICAT) for the 73rd Street corridor. During the five-year crash period, 146 crashes occurred on the corridor with 105 property damage only (PDO), 32 possible injury (C), 7 non-incapacitating (B), and 2 incapacitating (A). The annual average number of crashes for each crash level was calculated. In the no-build scenario, the average annual number of crashes by level continues as no improvements for safety are constructed. In the build scenario, future crashes are reduced based on crash modification factors for lowering the speed limit, resurfacing the pavement, and providing a raised median.

	Undiscounted Total (in millions $)	Discounted Total (in millions $)
Safety	20.18	12.39

Travel Time Savings

Corridor level peak hour delays were developed by the City of Windsor Heights on-call consultants in a traffic study supporting the proposed improvements. Based on PM peak hour delays for both north and southbound directions, the future build analysis shows traffic operations improvement in the northbound direction and increased delays in the southbound direction. Applying the future no-build vehicle delays to no-build traffic volumes results in travel time costs for the no-build scenario. Applying future build vehicle delays to build traffic volumes results in travel time costs for the build scenario.

	Undiscounted Total (in millions $)	Discounted Total (in millions $)
Travel Time Savings	8.11	4.97

Vehicle Operating Costs

USDOT guidance for vehicle operating costs is estimated on a per mile basis. Due to no forecasted change in traffic volumes between the no-build and build scenarios, there is no measurable benefit between the two scenarios in terms of vehicle operating costs.

	Undiscounted Total (in millions $)	Discounted Total (in millions $)
Vehicle Operating Cost Savings	0.00	0.00

Emissions

Emissions for the no-build and build scenarios were calculated using forecasted traffic volumes, existing and proposed speed limits, and emissions factors provided by the Iowa DOT. The emissions factors are the same used for the Iowa Clean Air Attainment Program (ICAAP) for estimating emissions reductions in accordance with the state's CMAQ funding. Emissions rates were calculated for both light duty passenger vehicles and heavy-duty vehicles at 30 and 35 miles per hour. Due to slightly higher emissions at lower speeds, the build scenario produces more emissions than the no-build scenario. Therefore, emissions are a disbenefit of this project.

	Undiscounted Total (in millions $)	Discounted Total (in millions $)
Non-CO2 Emissions Reduction	-0.15	-0.09
CO2 Emissions Reduction	0.00	0.00

Pavement Condition Improvement

While vehicle operating costs capture costs for gasoline, maintenance, tires, and depreciation, these capture only those regular on-going and routine costs. According to TRIP, a national transportation research nonprofit, Iowans pay $428 per driver per year for additional repairs due to poor road conditions. As the 73rd Street project will reconstruct street segments with poor pavement conditions, this increased cost is applicable to the drivers on 73rd Street. In the build scenario, the cost is reduced as the road condition is improved. The number of drivers was estimated to be half the AADT on the corridor per year.

	Undiscounted Total (in millions $)	Discounted Total (in millions $)
Pavement Condition Improvement	93.81	57.50

Residual Value

The residual value of the project was estimated using the predefined formula in the USDOT template to account for benefit of the project beyond the analysis period. It is assumed the useful life of the project is 30 years.

	Undiscounted Total (in millions $)	Discounted Total (in millions $)
Residual Value	7.02	3.18

STAFF REPORT
CITY COUNCIL
January 23, 2025

TO: CITY COUNCIL

FROM:

SUBJECT: Consideration of Resolution No. 2025-05 - A Resolution For Adopting 2024 Polk County Hazard Mitigation Plan

GENERAL INFORMATION

ATTACHMENTS

1. 2024 Polk County Hazard Mitigation Plan Proposed Updates
2. 2024 Polk County Hazard Mitigation Plan
3. Resolution No. 2025-05 - Adopting 2024 Polk County Hazard Mitigation Plan

2024 Polk County Hazard Mitigation Plan Proposed Updates to City Council:

Under 2.217

- Land Use/Management/Development Planning should read department, Third Party – Bolton Menk
- Comprehensive Emergency Management Plan - Approved 7-19-21
- Stormwater Management Plan/Ordinance - Ordinance 161.08 STORM WATER STANDARDS.
- General Obligation, Revenue, and/or Special Tax Bonds – currently used

2024

Polk County, Iowa

Hazard Mitigation Plan



POLK COUNTY EMERGENCY MANAGEMENT

Chapter 1:
Introduction and Planning Process



1. INTRODUCTION AND PLANNING PROCESS

1.1. PURPOSE

Polk County and the participating cities, public school districts, and Des Moines Water Works prepared the 2024 Polk County Hazard Mitigation Plan to guide decisions about risk reduction to better protect people and property throughout the county. This plan demonstrates the jurisdiction's commitments to reducing risks from hazards and serves as a tool to help decision makers direct mitigation activities and resources. This plan was also developed to maintain Polk County and the participating jurisdictions' eligibility for certain federal grant programs; specifically, the Federal Emergency Management Agency's (FEMA) Hazard Mitigation Assistance (HMA) grants such as the Hazard Mitigation Grant Program (HMGP), Building Resilient Infrastructure and Communities (BRIC), and Flood Mitigation Assistance (FMA) Programs. This document is an update of the previous plan, which was approved by FEMA on July 16, 2019.

1.2. BACKGROUND AND SCOPE

Each year in the United States, disasters take the lives of hundreds of people and injure thousands more. Nationwide, taxpayers pay billions of dollars annually to help communities, organizations, businesses, and individuals recover from disasters. These monies only partially reflect the true cost of disasters because additional expenses to insurance companies and nongovernmental organizations are not reimbursed by tax dollars. Many disasters are predictable, and much of the damage caused by these events can be alleviated or even eliminated.

Hazard mitigation is defined by FEMA as "any sustained action taken to reduce or eliminate long-term risk to human life and property from a hazard event." The results of a three-year, congressionally mandated independent study to assess future savings from mitigation activities provides evidence that mitigation activities are highly cost-effective. On average, each dollar spent on mitigation saves society an average of $4 in avoided future losses in addition to saving lives and preventing injuries.

Hazard mitigation planning is the process through which hazards that threaten communities are identified, likely impacts of those hazards are determined, mitigation goals are set, and appropriate strategies to lessen impacts are determined, prioritized, and implemented.

This plan documents the hazard mitigation planning process undertaken by the Polk County Hazard Mitigation Planning Committee (HMPC). It identifies relevant hazards and vulnerabilities in the planning area and sets forth an updated mitigation strategy to decrease vulnerability and increase resiliency and sustainability in Polk County.

The Polk County Hazard Mitigation Plan was developed collaboratively by the following participating jurisdictions within Polk County's boundaries (hereinafter referred to as the planning area):

- Unincorporated Polk County
- City of Alleman
- City of Altoona
- City of Ankeny
- City of Bondurant
- City of Clive
- City of Des Moines
- City of Elkhart
- City of Grimes
- City of Johnston
- City of Mitchellville
- City of Pleasant Hill
- City of Polk City
- City of Runnells
- City of Urbandale
- City of West Des Moines
- City of Windsor Heights
- Des Moines Water Works
- Delaware Township
- Saylor Township
- Ankeny School District 261
- Bondurant-Farrar School District 720
- Des Moines Independent School District 1737
- Johnston School District 3231
- North Polk School District 4779
- Southeast Polk School District 6101
- Urbandale School District 6579
- West Des Moines School District 6957

Saylor Township did not participate in the previous plan and joined the mitigation planning team for the first time with this 2024 update. The Dallas Center – Grimes School District was a participant in the previous plan but was unable to participate in this update due to conflicting priorities.

There are several cities within Polk County that have portions of their city limits in adjacent counties. The following cities are bi-county/multiple-county cities that are either a part of the Des Moines Metro Area that have portions of their city limits in other counties, or cities that have most of their corporate limits in Polk County.

- Clive (parts in Dallas County)
- Urbandale (parts in Dallas County)
- West Des Moines (parts in Dallas County, Madison County, & Warren County)
- Grimes (parts in Dallas County)
- Des Moines (parts in Warren County)
- Mitchellville (parts in Jasper County)

This plan was prepared pursuant to the requirements of the Disaster Mitigation Act of 2000 (Public Law 106-390) and the implementing regulations set forth by the Interim Final Rule published in the Federal Register on February 26, 2002, (44 CFR §201.6) and finalized on October 31, 2007. (Hereafter, these requirements and regulations will be referred to collectively as the Disaster Mitigation Act.) While the act emphasized the need for mitigation plans and more coordinated mitigation planning and implementation efforts, the regulations established the requirements that local hazard mitigation plans must meet for a local jurisdiction to be eligible for certain federal disaster assistance and hazard mitigation funding under the Robert T. Stafford Disaster Relief and Emergency Act (Public Law 93-288). This update also reflects FEMA's updated Local Mitigation Planning Policy Guide, effective April 19, 2023.

Information in this plan will be used to help guide and coordinate mitigation activities and decisions for local land use policy in the future. Proactive mitigation planning will help reduce the cost of disaster response and recovery to communities and their residents by protecting critical community facilities, reducing liability exposure, and minimizing overall community impacts and disruptions. The planning area has been affected by hazards in the past and the participating jurisdictions are therefore committed to reducing future impacts from hazard events and becoming eligible for mitigation-related federal funding.

1.3. PLAN ORGANIZATION

This Polk County Multi-jurisdictional Hazard Mitigation Plan update is organized as follows:

- Chapter 1: Introduction and Planning Process
- Chapter 2: Planning Area Profile and Capability Assessment
- Chapter 3: Hazard Identification and Risk Assessment (HIRA)
- Chapter 4: Mitigation Strategy
- Chapter 5: Plan Maintenance Process

- Appendices

This is the same general format that was used for the 2018 Multi-jurisdictional Polk County Hazard Mitigation Plan.

1.4. PLANNING PROCESS

In October 2023, Polk County contracted with Witt O'Brien's to facilitate the update of the existing multi-jurisdictional local hazard mitigation plan. Witt O'Brien's role was to:

- Assist in establishing the Hazard Mitigation Planning Committee (HMPC) as defined by the Disaster Mitigation Act (DMA),
- Ensure the updated plan meets the DMA requirements as established by federal regulations and following FEMA's planning guidance,
- Facilitate the entire planning process,
- Identify the data requirements that HMPC participants could provide and conduct the research and documentation necessary to augment that data,
- Assist in facilitating the public input process,
- Produce the draft and final plan update documents, and
- Coordinate the Iowa Homeland Security an Emergency Management Division and FEMA plan reviews.

1.4.1. MULTI-JURISDICTIONAL PARTICIPATION

Representatives from each participating jurisdiction, departments of the County, and other local, state, and federal organizations were invited to help develop the plan and agree upon the final contents. To ensure all key mitigation planning areas (prevention, property protection, natural resource protection, emergency services, structural flood control, and public information) were represented, the planning team encouraged participation from a wide variety of expertise backgrounds including, but not limited to, building officials, public works, planners, fire and emergency service officers, and administrative staff. The jurisdictions that elected to participate are listed above in section 1.2. Each jurisdiction that chose to participate in the planning process and development of the plan was required to meet plan participation requirements, which included:

- Designating a representative to serve on the HMPC;
- Participating in at least one plan-related meeting by either direct representation or authorized representation;
- Providing information to support the plan development by completing and returning worksheets and responding to other data and information requests;

- Providing status updates on the mitigation actions identified in the previous plan, and identifying additional mitigation actions;
- Reviewing and commenting on plan drafts;
- Informing the public, local officials, and other interested parties about the planning process and providing an opportunity for them to comment on the plan; and
- Formally adopting the mitigation plan.

The table below summarizes the participation jurisdictions' representation at plan-related meetings. A complete list of all representatives of the agencies and organizations that participated on the Polk County HMPC is provided in Appendix C.

Table 1 – Jurisdictional Participation in Planning Process

Jurisdiction	Kickoff Meeting	HIRA Meeting	Strategy Meeting	Individual Meeting	Notes
Polk County (unincorporated)	X	X	X	X	The Polk County EMA team met biweekly with the Witt O'Brien's team throughout the planning process
City of Alleman	x		x		
City of Altoona	X	X	X		
City of Ankeny	x		x		
City of Bondurant	x		x		
City of Clive	X	X	X		
City of Des Moines	X	X	X		
City of Elkhart			x		
City of Grimes			x		
City of Johnston	x		x		
City of Mitchellville	x				
City of Pleasant Hill	x	x	x		
City of Polk City			x		
City of Runnells				x	A representative from Runnells met 1:1 with a member of the Witt O'Brien's planning team on 3/20/2024
City of Urbandale	x				
City of West Des Moines	x	x	x		
City of Windsor Heights	x				
Delaware Township				x	A representative from the township met 1:1 with a member of the Polk County

					EMA leadership team on 4/10/2024
Saylor Township				X	A representative from the township met 1:1 with a member of the Polk County EMA leadership team on 4/11/2024
Des Moines Water Works			X	X	A representative from DMWW met 1:1 with a member of the Witt O'Brien's planning team on 3/25/2024
Ankeny School District 261	X		X		
Bondurant-Farrar School District 720				X	A representative from the district met 1:1 with a member of the Witt O'Brien's planning team on 4/4/2024
Des Moines Independent School District 1737				x	A representative from the district met 1:1 with a member of the Polk County leadership team via phone on 4/12/2024
Johnston School District 3231			X		
North Polk School District 6101	X		X	X	A representative from the district met 1:1 with a member of the Witt O'Brien's planning team on 4/2/2024
Southeast Polk School District 6101			X		
Urbandale School District 6579	X				
West Des Moines School District 6957			X		

1.4.2. PUBLIC ENGAGEMENT

Substantive public engagement is key to a successful planning process, and to developing a strategy that reflects the community's values and priorities. Members of the public were given the opportunity to participate throughout the development of this plan.

At the beginning of the planning process, the planning team published a survey asking for the public's input. The survey was advertised via Polk County Emergency Management Agency's website and Facebook page, the City of Johnston's website, and on the Polk County DisasterLAN page. This survey was available for responses from November 9, 2023, to December 8, 2023.

The survey asked a variety of questions, including:

- How concerned are you about your community being impacted by a natural disaster?

- How concerned are you about natural hazard impacts from climate change within your community?
- How well prepared do you think your city/town is for a natural disaster?
- What are the top 5 hazards that you think present the greatest threat to your community?
- What actions have you taken to make your home, business, or neighborhood more resilient to natural hazards?

On November 30, 2023, the planning team hosted a public meeting. This meeting included opportunities for both in-person and virtual participation, and it included an overview of hazard mitigation concepts and the function and purpose of a hazard mitigation plan. It served as a chance to further advertise the public survey that was still open for comment and allowed for input from and open discussion with community members. 21 people participated in this meeting.

Once the plan draft was completed, the public was given the opportunity to review the draft and provide feedback and comments. The draft was posted online on Friday, April 19th, 2024, alongside a survey that asked community members to provide feedback and rate the survey. The public review period lasted for two weeks, through Friday, May 3rd, 2024. Documentation related to public engagement with the planning process is available in Appendix C.

1.4.3. STAKEHOLDER ENGAGEMENT

A successful planning effort includes active participation and buy-in from community leaders, stakeholders, and the public. The National Mitigation Framework emphasizes the valuable role of collaboration among various sectors to ensure that mitigation capabilities continue to grow, and that comprehensive mitigation includes strategies for all community sectors. To that end, the planning team invited a wide variety of stakeholders to participate in meetings, provide input, and comment on the draft plan. These included neighboring communities, academic organizations, state agencies, agencies that regulate development, businesses, and community organizations. These entities were included in an attempt to incorporate feedback from a broad section of the community, including underserved populations such as those who have a disability, are economically distressed, minority populations, and others whose voices should not be excluded from planning efforts. Appendix C includes a complete list of those organizations invited to participate. Stakeholders invited to provide feedback included:

- Several non-participating school districts
- Neighboring communities' emergency managers
- Broadlawns Medical Center
- Children and Families of Iowa
- Corteva

- Des Moines Air National Guard Base
- Des Moines Area Community College
- Des Moines University
- Diocese of Des Moines
- Drake University
- EMC Insurance
- Grace United Methodist Church
- Grand View University
- Homeward Iowa
- Iowa Army National Guard
- Iowa Disaster Human Resource Council
- Jewish Federation of Greater Des Moines
- LifeServe Blood Center
- Madrid Community Schools
- MercyOne Des Moines Medical Center
- MidAmerican
- Northern Natural Gas
- Polk County Conservation
- UnityPoint Health

1.4.4. PROJECT TIMELINE

The planning team met formally three times to discuss the planning process, share information, review draft plan components, and identify strategies and actions to include in the new plan. A timeline of the planning process is as follows:

- September 2023:
    - Polk County Emergency Management worked with participating jurisdictions to solicit participation and identify planning team members
- October 2023:
    - Polk County contracted with Witt O'Brien's

- **October 4, 2023: Polk County Hazard Mitigation Plan Update Kickoff Meeting** - Hybrid virtual and in-person meeting, via Microsoft Teams and at the Polk County Emergency Management office. Discussion topics included:
  - Planning team introductions
  - Hazard mitigation overview
  - The mitigation planning process
  - Hazard identification data gathering exercises
  - Critical facility and asset identification
  - Questions and next steps
- Capability Assessment and Hazard Identification Exercise worksheets shared with planning team members

- November 2023:
  - Participating jurisdictions provided feedback on the hazards causing the greatest challenges for their communities by completing Hazard Identification Exercise worksheets
  - Participating jurisdictions began cataloguing their capabilities and resources, as outlined in the Capability Assessment Worksheet
  - Polk County works with the planning team to identify critical facilities and assets to use in the plan update.
  - The public was given the opportunity to provide input on the plan via the "Polk County Hazards Public Participation" survey, which was open from November 9, 2023, to December 8, 2023.
  - **November 30, 2023: Public Meeting - Polk County Multi-Jurisdictional Hazard Mitigation Plan –** Virtual and in-person hybrid meeting open to the public. Discussion topics included:
    - Hazard mitigation and mitigation planning overview
    - Availability of public survey
    - Opportunity for input and open discussion
    - Next steps and timeline

- December 2023
    - Critical facilities list was finalized
    - Witt O'Brien's began conducting hazard analysis and mapping for inclusion in the HIRA
- January 2024:
    - Mapping and modeling for the HIRA was substantively completed
- February 2024:
    - A wide variety of stakeholders (including non-government organizations, businesses, and neighboring communities) were invited to join the planning team, participate in future meetings, and comment on the draft plan.
    - **February 20, 2024: Polk County Mitigation Plan Update - HIRA Meeting -** Hybrid virtual and in-person meeting, via Microsoft Teams and at the Polk County Emergency Management office. Discussion topics included:
        - Plan process review
        - HIRA progress
        - Hazard maps developed to date
        - Results of the public survey
        - Brainstorming hazard mitigation actions
    - Strategy worksheets were shared with plan participants
- March 2024:
    - Plan participants provided feedback on the goals and objectives for the plan, reviewed their actions from the previous plan, determined which to keep in the new plan, and identified new actions (via the Strategy Worksheet).
    - **March 19, 2024: Polk County Mitigation Strategy Meeting -** Hybrid virtual and in-person meeting, via Microsoft Teams and at the Polk County Emergency Management office. Discussion topics included:
        - Plan status
        - Review and discussion of the proposed goals for the plan

- Mitigation action development updates, discussion, brainstorming, and problem-solving
- Discussion of aligning mitigation actions with grant opportunities
- Timeline, Next Steps, and Questions

- April 2024:
  - The Planning Team provided all remaining input, worksheets, and data, and the plan draft was finalized.
  - The draft plan was made available for public review online on **April 22, 2024,** and remained available for public comment through **May 6th, 2024.** An online form allowed plan participants to provide feedback on the draft, and on risk reduction in Polk County in general.

Documentation of the planning process (including presentations, meeting participation, surveys and results, and relevant communications) is available in Appendix C: Process and Participation Documentation.

1.4.5. INCORPORATING EXISTING DATA

In assembling the updated plan, the mitigation planning team consulted a wide variety of existing plans, studies, reports, and technical information, and incorporated relevant data into the document. These include the following:

- Iowa Hazard Mitigation Plan (September 2023);
- Polk County Multi-Jurisdictional Hazard Mitigation Plan (2018);
- Polk County Multi-Jurisdictional Hazard Mitigation Plan (July 2014);
- Federal Emergency Management Agency (FEMA);
- Iowa Department of Natural Resources;
- National Drought Mitigation Center Drought Reporter;
- US Department of Agriculture's (USDA) Risk Management Agency Crop Insurance Statistics;
- Data Collection Guides completed by each jurisdiction;
- Des Moines Area Regional GIS Partnership;
- Environmental Protection Agency;
- Flood Insurance Administration;
- Goods Movement in the Des Moines Metropolitan Area, 2002;

- Iowa Department of Agriculture and Land Stewardship, Division of Soil Conservation;
- Iowa Department of Education, Bureau of Information and Analysis Services;
- Iowa Department of Public Safety;
- Iowa Department of Transportation, Office of Traffic and Safety;
- Iowa Flood Center;
- Iowa State Fire Marshal Division;
- Iowa Utilities Board;
- National Fire Incident Reporting System (NFIRS);
- National Oceanic and Atmospheric Administration's (NOAA) National Climatic Data Center;
- National Oceanic and Atmospheric Administration's (NOAA) National Weather Service, Des Moines Weather Forecast Office;
- Pipeline and Hazardous Materials Safety Administration;
- Polk County Comprehensive Plan;
- Polk County Emergency Management;
- Polk County Preliminary Digital Flood Insurance Rate Map, FEMA;
- Polk County Preliminary Flood Insurance Study, FEMA;
- SILVIS Lab, Department of Forest Ecology and Management, University of Wisconsin;
- The Tomorrow Plan: Partnering for a Greater, Greener Des Moines, July 2013 Draft;
- U.S. Army Corps of Engineers;
- U.S. Department of Transportation;
- United States Geological Survey; and,
- Various online articles and publications (sources are indicated where data is cited).

Chapter 2:
Planning Area Profile and Capability Assessment



2. PLANNING AREA PROFILE AND CAPABILITY ASSESSMENT

This chapter provides a general profile of Polk County followed by individual sections for each participating jurisdiction. The sections for each jurisdiction provide an overview profile as well as details on existing capabilities, plans, and programs that enhance their ability to implement mitigation strategies.

2.1. POLK COUNTY PLANNING AREA PROFILE

As of 2020, the United States Census Bureau estimates the total Polk County population to be 492,401. The 2020 population of Polk County increased by 14.3% since 2010, and this population growth rate is much higher than both the Iowa average rate of 4.7% and the national average rate of 7.4% during the same time span. In 2020, Polk County had 241,976 males (49%) and 250,425 females (51%). The ratio of males and females in Polk County remained virtually the same since the 2010 Census which reported 211,171 (49%) males and 219,469 (51%) females.

U.S. Census data from 2010 and 2020 shows that the racial profile of Polk County has changed. Overall, the percentage of the population within Polk County that identifies as White decreased from 84.7% in 2010 to 75.9% in 2020. Conversely, the percentage of the population within Polk County which identifies as Black or African American, American Indian or Alaska Native, Asian, or another minority race (other than native Hawaiian or Pacific Islander) increased. The percentage of the population which identifies as native Hawaiian or Pacific Islander remained the same between 2010 and 2020, although the count increased from 254 to 302. The portion of individuals identifying as and Asian and Black or African American increased the most between 2010 and 2020, growing by 1.5% and 1.2%, respectively. Additionally, the percentage of people in Polk County which identify as two or more races increased by 5.1% between 2010 and 2020.

Table 2 - Racial Demographics of Polk County 2010-2020

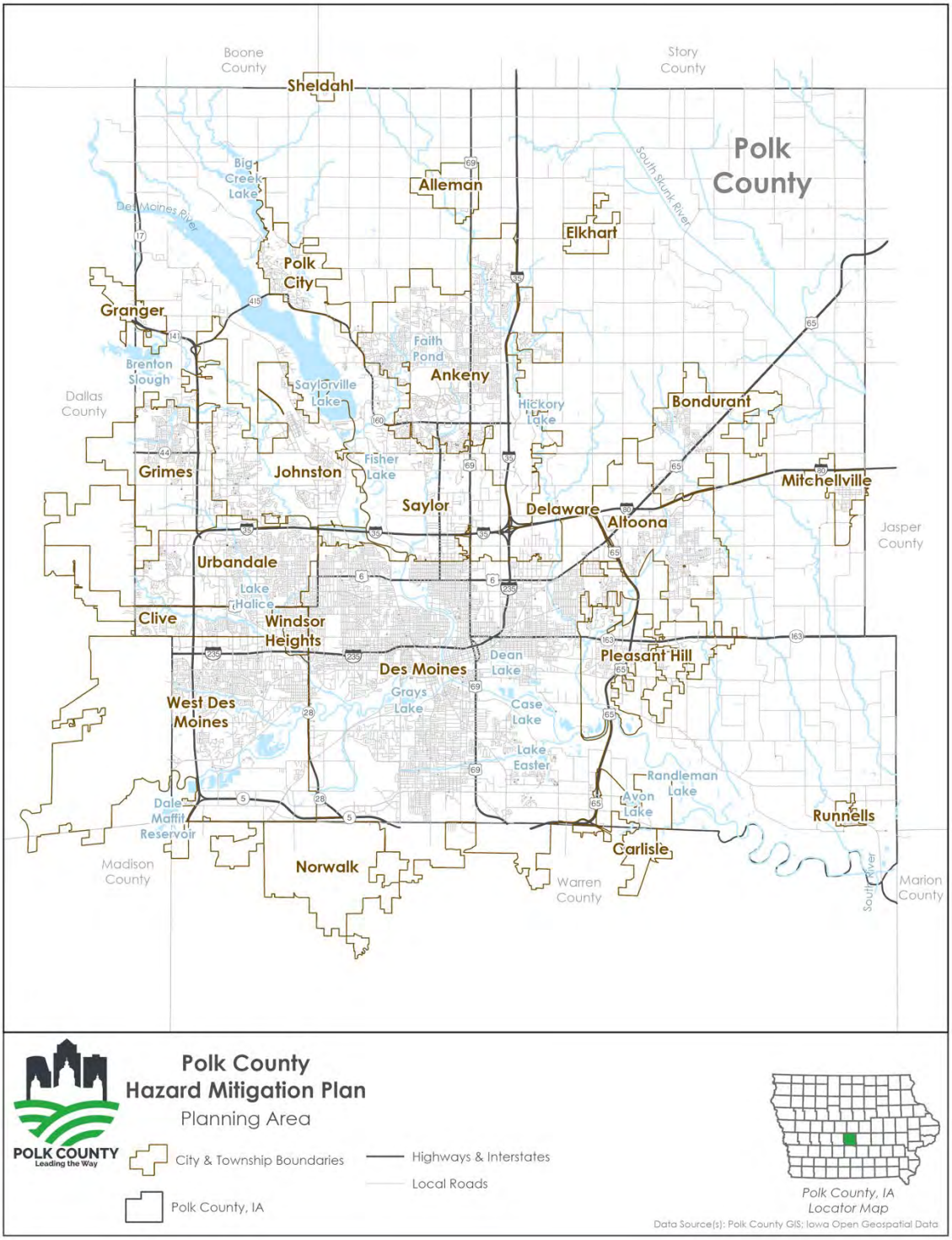
	2010		2020	
	Count	% of Total	Count	% of Total
Total Population	430,640	100%	492,401	100%
White	364,895	84.7%	373,903	75.9%
Black or African American	25,853	6.0%	35,623	7.2%
American Indian or Alaska Native	1,384	0.3%	2,274	0.5%

Asian	15,220	3.5%	24,510	5.0%
Native Hawaiian or Other Pacific Islander	254	0.1%	302	0.1%
Some Other Race	12,629	2.9%	19,100	3.9%
Two or More Races	10,405	2.4%	36,689	7.5%

According to 2017-2021 estimates from the U.S. Census Bureau, the median household income in Polk County is approximately $73,015. For comparison, the median household income across all Iowa counties is estimated to be $65,429.

The figure below provides a map of the Polk County planning area. The planning area boundaries include all portions (including portions in adjacent counties) of the city limits of the following incorporated cities: Alleman, Altoona, Ankeny, Bondurant, Clive, Des Moines, Elkhart, Grimes, Johnston, Mitchellville, Pleasant Hill, Polk City, Runnells, Urbandale, West Des Moines and Windsor Heights. The planning area also includes the Polk County portion only of the following multi-county cities: Carlisle, Granger, Norwalk and Sheldahl.

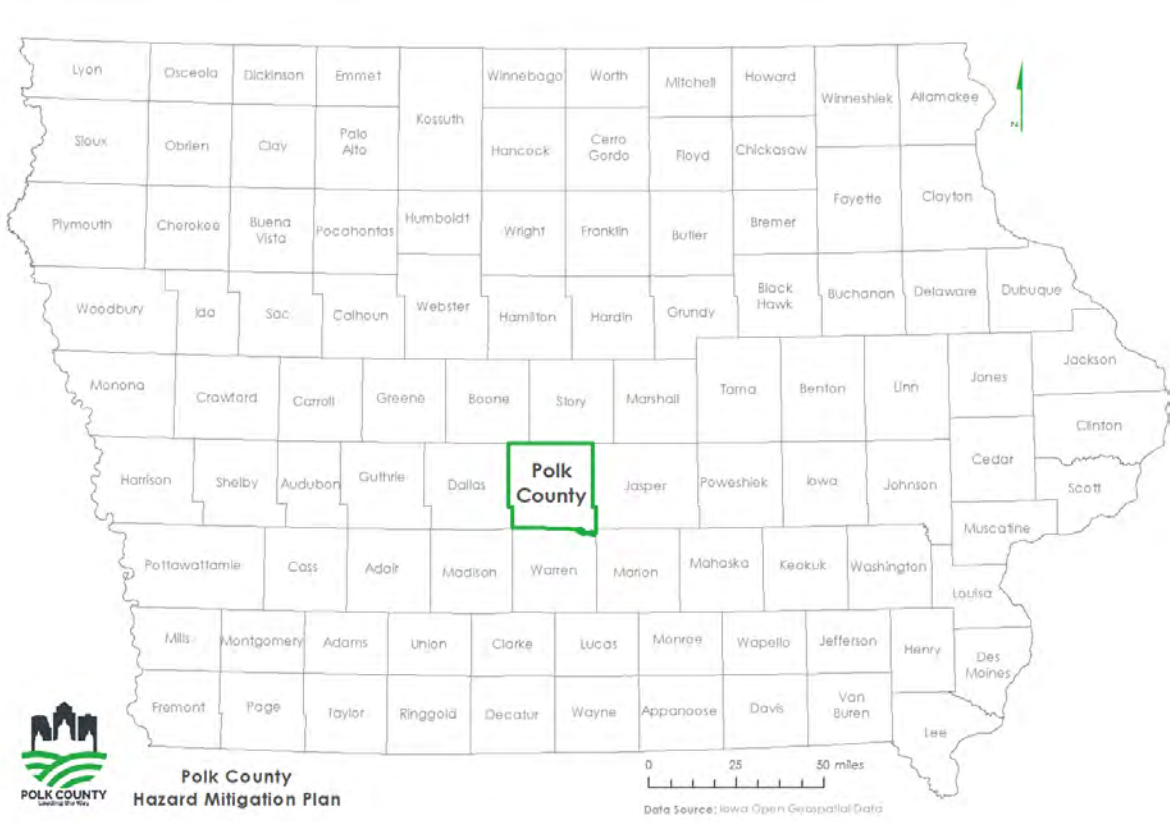
Figure 1 - Polk County Planning Area



2.1.1. GEOGRAPHY, GEOLOGY, AND TOPOGRAPHY

Polk County, Iowa is home to Iowa's capital city, Des Moines, and is located just a few miles southwest of the center of the State. Polk County has 573.79 square miles of land area and 17.74 square miles of water area.

Figure 2 – Location of Polk County in the State of Iowa



While a large portion of Polk County is still mostly rural, the Des Moines metro area is continually expanding into the rest of the County to accommodate the ongoing population growth within Polk County. This has resulted in the development of many rural acreage properties and several subdivisions in previously rural areas. In addition, growth is occurring in other cities in Polk County that are outside of the Des Moines metropolitan area. Development along the I-35 north corridor is also altering the rural character of that portion of the county.

Polk County crosses 4 watersheds. A list of these watersheds (along with the cities that lie at least partially in those watersheds) is provided below:

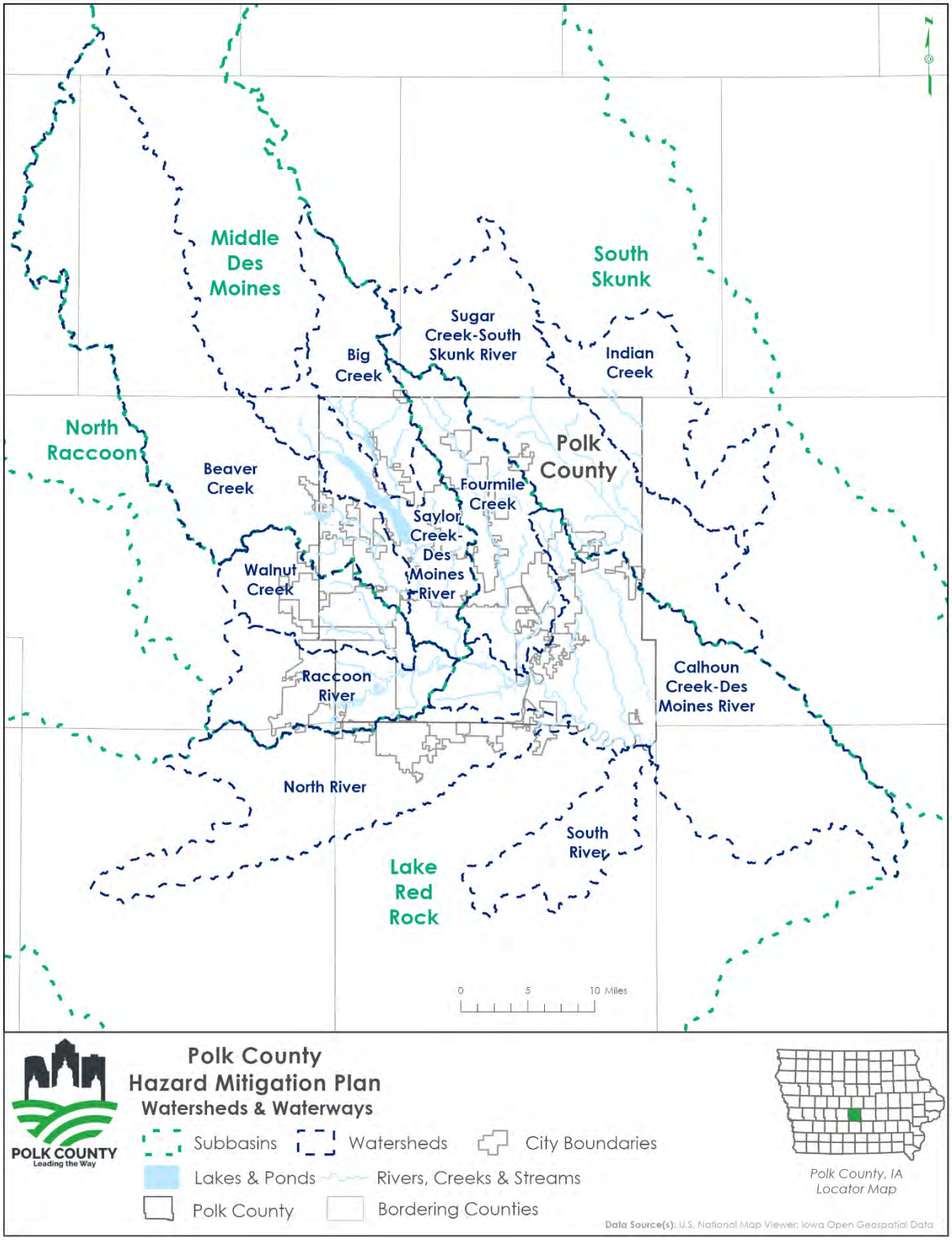
- South Skunk (07080105)
  - Elkhart

- Mitchellville
- Unincorporated Polk County

- North Raccoon (07100006)
  - West Des Moines
  - Urbandale
  - Clive
  - Windsor Heights
  - Grimes
  - Granger
  - Polk City
  - Alleman
  - Sheldahl
  - Unincorporated Polk County
- Middle Des Moines (07100004)
  - Des Moines
  - Johnston
  - Unincorporated Polk County
- Lake Red Rock (07100008)
  - Ankeny
  - Altoona
  - Carlisle
  - Bondurant
  - Pleasant Hill
  - Runnells
  - Unincorporated Polk County

The figure below shows the four watersheds in Polk County (South Skunk, Lake Red Rock, Middle Des Moines, and North Raccoon) (dark blue), as well as their subbasins (light blue).

Figure 3. Watersheds and Subbasins in Polk County



The North Raccoon River Watershed (NRRW) landscape is considered the most important and threatened waterfowl habitat in North America, supporting more than 300 migratory bird species. In 2013, the Iowa Nutrient Reduction Strategy named the NRRW a priority watershed. Many organizations are currently active in the watershed and existing projects will complement the activities of the Iowa Watershed Approach. A North Raccoon River Watershed Management Coalition (NRRWMC) was formed in 2016 to bring partners together to address watershed concerns.

The most extensive geological deposits in Polk County are those of glacial origin. The most recent of these was deposited by the Cary substage of the Wisconsin glacier about 12,000 to 13,500 years ago. This glacier deposited calcareous, loamy material 30 to 60 feet thick over the northern four-fifths of the county. Two other glaciers, the Kansan and Nebraskan, covered all of Polk County much earlier in the Pleistocene period. The till deposited by these glaciers is exposed in the southern part of the county. It can be found on the steeper side slopes but has been covered on the upland divides by a deposit of loess. The loess deposits are found in the same areas as the Kansan and Nebraskan till but most commonly on the rounded upland divides rather than the steep side slopes. The loess deposits are silty and are free of sand and gravel. They were deposited by the wind. In contrast, the glacial material contains many sand and gravel particles and some large boulders.

Alluvial materials are present throughout Polk County. These are water-deposited materials that range from gravel to silty clay in texture. Some of the material was glacial outwash deposited as the glacial ice was melting. In other areas the material was deposited by overflowing streams.

The entire county is underlain by bedrock of the Des Moines group, a shale formation of the Pennsylvanian system. This shale bedrock contains some thin seams of coal and some interbedded limestone or sandstone. Most of the bedrock is buried beneath several feet of glacial till, loess, or stream deposited material. The bedrock formations are exposed on a few slopes in the southern part of the county.

The uplands in the northern four-fifths of the county are, for the most part, nearly level to undulating, though there are some steeper areas along the major streams. This part of the county was covered by glacial material that has, in most places, been altered very little since the time of glaciation. The southern part of the county is much rougher and hillier than the northern part, and the glacial material is older and has been cut up extensively by streams. The river valleys are 1 to 3 miles wide, and there are many tributary streams.

2.1.2. CLIMATE

Over the past 10 years (2013 – 2023), the warmest average month in Polk County has been July (74.3°F) and the coldest average month has been January (22.0 F). Regarding precipitation, the wettest average month in Polk County over the past 10 years has been May (4.98 inches), although June is a close second (4.96 inches). The driest average month in Polk County has been January (1.03 inches), although the winter months can be quite snowy. According to the National Oceanic and Atmospheric Administration, one inch of precipitation is roughly equivalent to 13 inches of snow.[1]

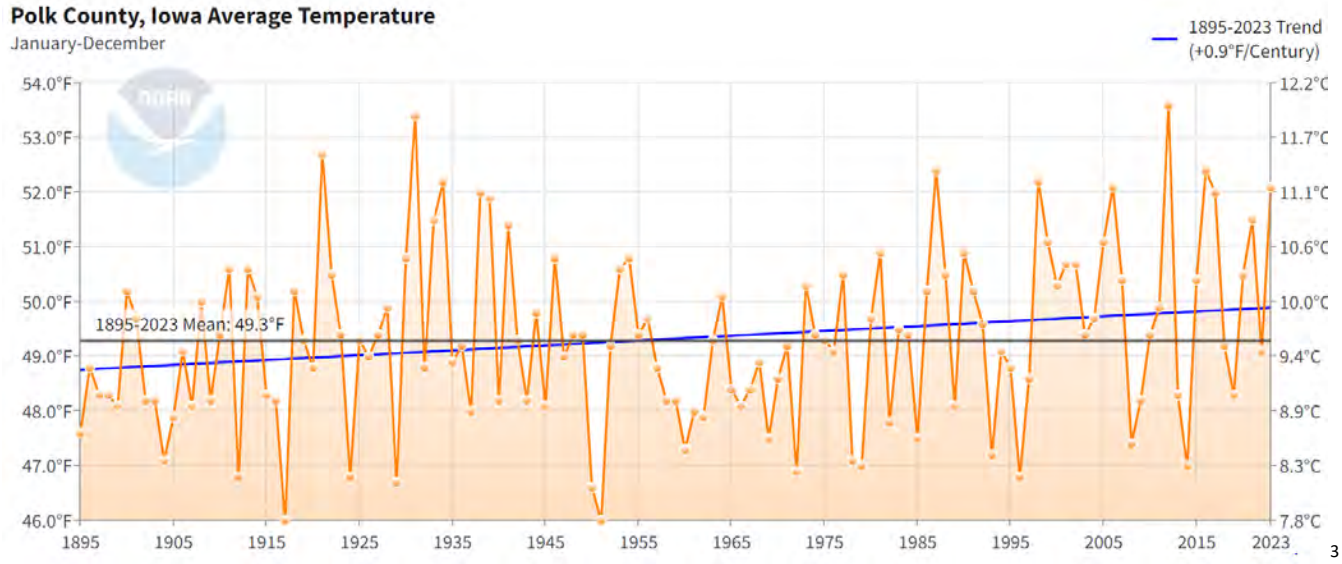
Long-term data provided by the National Oceanic and Atmospheric Administration indicates that the average temperature in Polk County has increased at an approximate rate of 0.9 F per century since 1895. The coldest average year in Polk County is a tie between 1917 and 1951 (46.0 F), while the warmest average year in Polk County was 2012 (53.6 F). Over the same 128-year period, the driest year in Polk County was 1910 when only 18.83 inches of precipitation was recorded. Conversely, Polk County's wettest year occurred exactly one century later when 54.75 inches of precipitation fell during 2010. Overall precipitation in Polk County appears to be increasing, as the average annual precipitation has increased at an approximate rate of 3.40 inches per century.

Table 3 – Average Temperature and Precipitation per Month (2013-2023)[2]

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Average Temperature (Fahrenheit)	22.0	23.3	37.7	49.3	61.4	72.5	74.3	72.6	67.5	52.6	38.7	28.8
Average Precipitation (inches)	1.03	1.10	2.06	3.07	4.98	4.96	3.56	3.97	4.18	3.14	1.46	1.53

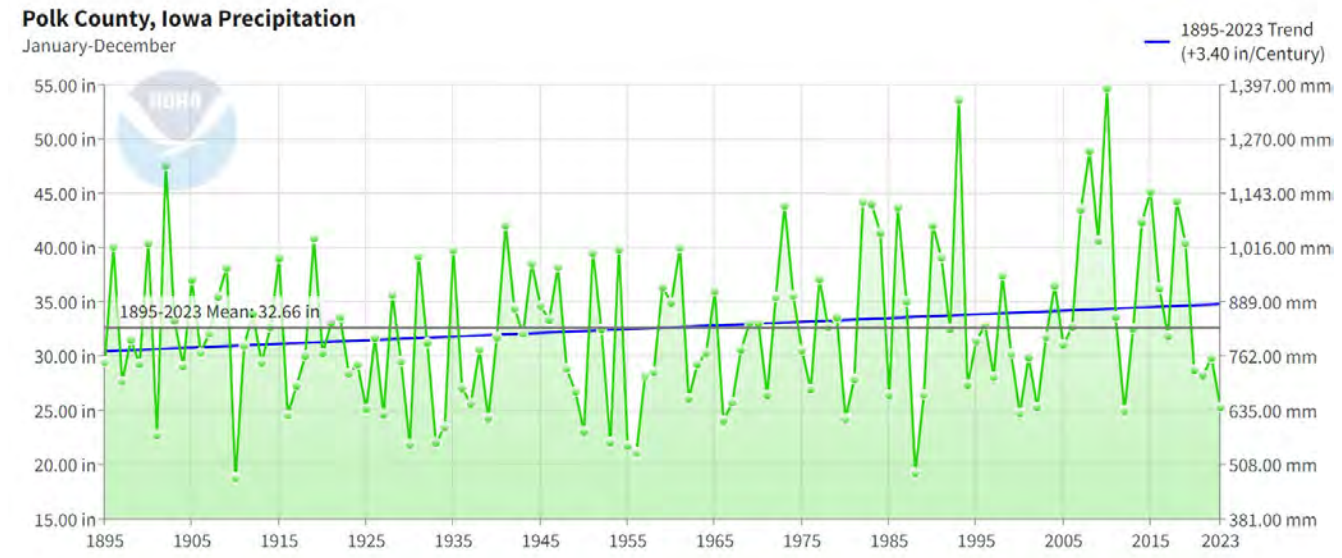
[1] National Oceanic and Atmospheric Administration. "Winter Weather FAQ." nssl.noaa.gov. Accessed January 22, 2024. https://www.nssl.noaa.gov/education/svrwx101/winter/faq/.
[2] National Centers for Environmental Information. "County Time Series | Climate at a Glance." ncei.noaa.gov, 2023. https://www.ncei.noaa.gov/access/monitoring/climate-at-a-glance/county/time-series/IA-153/pcp/1/12/2013-2023?base_prd=true&begbaseyear=2013&endbaseyear=2023.

Figure 4. Average Yearly Temperature for Polk County, Iowa 1895 - 2023



[3]

Figure 5. Average Yearly Precipitation for Polk County, Iowa 1895 - 2023



[3] National Centers for Environmental Information. "County Time Series | Climate at a Glance." nssl.noaa.gov, 2024. https://www.ncei.noaa.gov/access/monitoring/climate-at-a-glance/county/time-series/IA-153/tavg/12/12/1895-2023?base_prd=true&begbaseyear=1895&endbaseyear=2023&trend=true&trend_base=100&begtrendyear=1895&endtrendyear=2023.

2.1.3. POPULATION AND DEMOGRAPHICS

According to the latest Census, the overall population in Polk County was 492,401 as of 2020. Between 2010 and 2020, the population in Polk County increased by 61,761, which is by far the largest increase in population among all Iowa counties during that time. In terms of percent increase, Polk County is 3rd among all Iowa counties, behind only Dallas and Johnson counties. Among the incorporated communities in Polk County, the City of Ankeny experienced the largest numerical increase in population (22,305), while Bondurant had the largest percent increase in population (90.8%). Comparing Census data between 2010 and 2020 reveals that the populations of suburbs surrounding Des Moines – such as Clive, Grimes, Urbandale, and West Des Moines – have grown at a faster rate than the City of Des Moines itself. Several communities recorded a smaller population in 2020 than 2010, but these communities decreased by a combined total of less than 300 people.

Table 4 - Population Change in Polk County Communities 2010 - 2020

Jurisdiction	2010 Population	2020 Population	2010-2020 # Change	2010-2020 % Change
Alleman	432	423	-9	-2.1%
Altoona	14,541	19,565	5,024	34.6%
Ankeny	45,582	67,887	22,305	48.9%
Bondurant	3,860	7,365	3,505	90.8%
Carlisle	3,876	4,160	284	7.3%
Clive	15,447	18,601	3,154	20.4%
Delaware Township	6,204	6,187	-17	-0.3%
Des Moines*	204,220	214,133	9,913	4.9%
Elkhart	683	882	199	29.1%
Granger	1,244	1,654	410	33.0%
Grimes	8,246	15,392	7,146	86.7%
Johnston	17,278	24,064	6,786	39.3%
Mitchellville	2,254	2,485	231	10.2%
Norwalk	8,941	12,799	3,858	43.1%
Pleasant Hill	8,785	10,147	1,362	15.5%
Polk City	3,418	5,543	2,125	62.2%
Runnells	507	457	-50	-9.9%
Sheldahl	319	297	-22	-6.9%
Saylor Township	6,472	6,287	-185	-2.9%

Jurisdiction	2010 Population	2020 Population	2010-2020 # Change	2010-2020 % Change
Urbandale	39,463	45,580	6,117	15.5%
West Des Moines	56,609	68,723	12,114	21.4%
Windsor Heights	4,860	5,252	392	8.1%
Unincorporated Polk County	*Unavailable; U.S. Census data does not specifically address unincorporated Polk County*			
Polk County Total	**430,640**	**492,401**	**61,761**	**14.3%**

Source: U.S. Bureau of the Census, 2010 and 2020 Censuses. Population includes the portions of these cities in adjacent counties. As a result of this, the sum of all communities is not equal to Polk County totals.

The Social Vulnerability Index (SVI) is a tool developed by the Center for Disease Control and Prevention (CDC) and the Agency for Toxic Substances and Disease Registry (ATSDR). The tool uses U.S. Census data to determine the social vulnerability of every census tract. The Geospatial Research, Analysis & Services Program (GRASP) maintains SVI to help public health officials and local planners better prepare for and respond to emergency events like hurricanes, disease outbreaks, or exposure to dangerous chemicals. The CDC/ATSDR SVI tool uses 16 different social factors grouped into 4 “themes” to assess the overall social vulnerability of census tracts and counties across the country. A percentile ranking represents the proportion of tracts (or counties) that are equal to or lower than a tract (or county) of interest in terms of social vulnerability. For example, an SVI ranking of 0.85 signifies that 85% of tracts (or counties) in the state or nation are less vulnerable than the tract (or county) of interest and that 15% of tracts (or counties) in the state or nation are more vulnerable. The figure below shows the sixteen different social factors, as well as the four themes, which are utilized in the SVI tool. Notably, many federal grant programs use SVI score as part of their decision making process, providing more favorable chances of support and funding to communities whose SVI scores show that they are more vulnerable.

Figure 6. Variables and Themes Used in the CDC/ATSDR Social Vulnerability Index

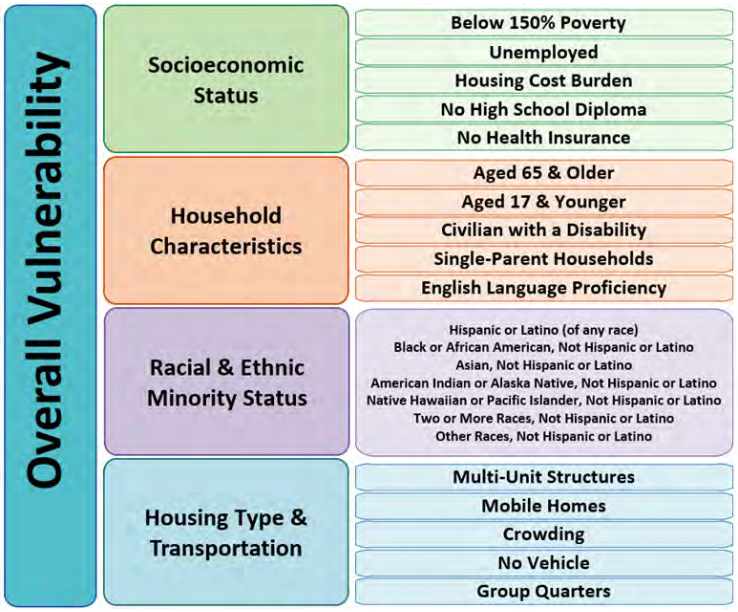


Figure 7. CDC/ATSDR SVI Map of Iowa Counties

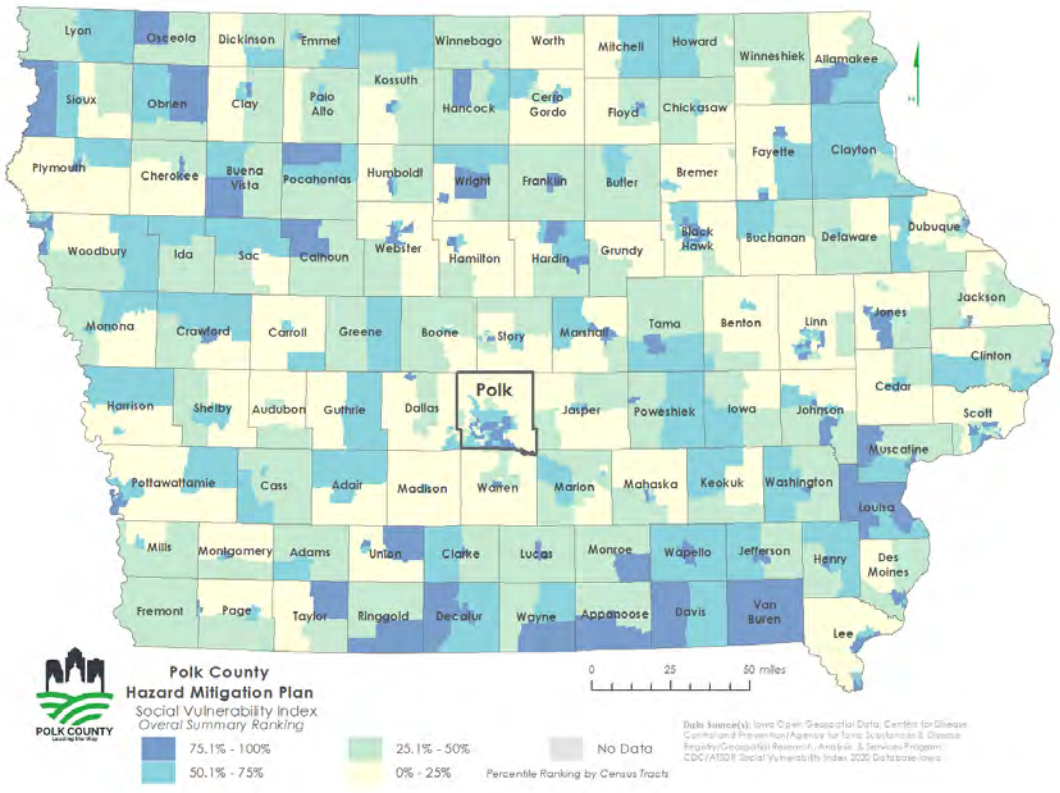
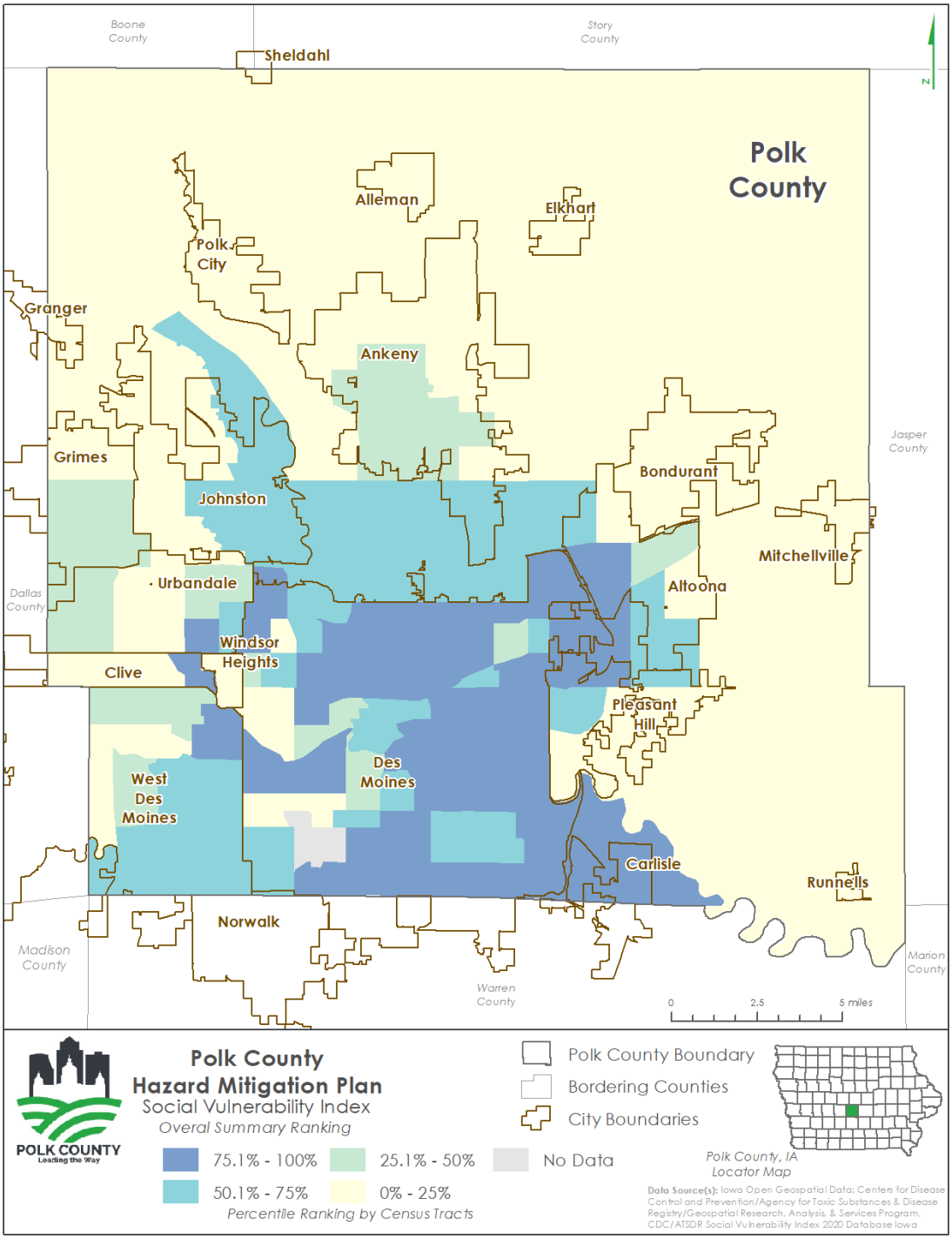


Figure 8. CDC/ATSDR SVI Map of Polk County Census Tracts



As of 2020, the CDC/ATSDR SVI tool gives Polk County, Iowa a score of 0.4574 nationally and 0.8469 statewide. Interestingly, the difference between the national and statewide SVI scores for Polk County indicates that the State of Iowa is a relatively resilient

state. When compared to the other 98 counties in Iowa, Polk County has a high level of social vulnerability, with only 15 counties receiving a higher SVI score. However, the relative vulnerability of Polk County is much lower when compared to all U.S. counties (and county equivalents). Nationally, approximately 56% of the 3,243 county and county equivalents in the U.S. are considered more vulnerable than Polk County according to the SVI tool.

Within Polk County, the most vulnerable census tracts are those in the south-central portion of the county, roughly corresponding to the Des Moines metro area. The vulnerability scores of census tracts in Polk County quickly decrease north of Interstate 80. Table 5 provides additional demographic and economic indicators for Polk County. The Polk County values are for all of Polk County, including the incorporated cities.

Table 5 - 2022 Unemployment, Poverty, Education, and Language Percentage Demographics

Jurisdiction	Total in Labor Force	Percent of Population Unemployed	Percent of Families Below the Poverty Level	Percent of Population Aged 65 and Over	% of Population High School Graduate or Higher Education	% of Population Bachelor's Degree or Higher Education	% of population (spoken language other than English)
Polk County	275,129	4.5%	7.3%	13.5%	92.7%	38.9%	14.7%
Alleman	226	0.9%	0.0%	18.7%	98.2%	45.4%	1.1%
Altoona	10,996	6.7%	3.2%	14.1%	96.4%	32.6%	4.5%
Ankeny	39,513	2.6%	3.1%	11.3%	98.0%	53.0%	8.0%
Bondurant	4,358	0.7%	4.8%	7.3%	95.6%	51.3%	3.5%
Carlisle	2,265	5.5%	5.8%	15.4%	93.2%	29.8%	0.9%
Clive	10,461	2.8%	0.9%	15.7%	95.9%	59.5%	18.0%
Delaware Township	*Data not available at the township level*						
Des Moines	118,759	5.9%	11.2%	12.4%	87.6%	28.7%	20.5%
Elkhart	291	0.7%	6.3%	14.8%	92.9%	24.0%	1.3%
Granger	996	4.0%	1.8%	9.2%	96.9%	36.1%	1.6%
Grimes	8,801	6.4%	4.0%	8.1%	98.4%	43.6%	9.5%
Johnston	12,698	2.0%	7.4%	15.4%	96.6%	54.4%	12.0%
Mitchellville	1,019	1.0%	5.9%	11.5%	90.3%	11.2%	2.5%
Norwalk	7,330	3.1%	1.9%	12.4%	98.6%	39.1%	1.0%
Pleasant Hill	4,970	9.2%	6.7%	12.2%	96.7%	31.1%	7.5%
Polk City	3,328	3.8%	6.5%	10.7%	99.7%	46.5%	0.6%
Runnells	221	5.9%	0.0%	16.0%	95.0%	16.7%	2.2%
Saylor Township	*Data not available at the township level*						

Sheldahl	197	14.2%	7.1%	12.3%	92.5%	29.4%	0.6%
Urbandale	24,903	2.1%	4.1%	14.2%	95.3%	51.9%	11.6%
West Des Moines	41,428	2.8%	6.2%	14.3%	96.6%	53.8%	13.6%
Windsor Heights	2,656	2.0%	6.8%	18.5%	98.0%	42.8%	16.0%

Source: U.S. Census, 2022 American Community Survey, 5-year Estimates.

2.1.4. HISTORY

Captain James Allen and his company arrived at the present site of Des Moines in May of 1843. Captain Allen proposed the name of Fort Raccoon originally, but he settled with the name Fort Des Moines at the suggestion of General Winfield Scott. The term "des moines" refers to the principal river between the Mississippi and Missouri Rivers. Soon after arrival, a fort was erected consisting of 25 buildings, which included stables and a barracks. A trading post was built across the river by Indian traders.

The towns of Brooklyn, Polk City, Dudley, and Fort Des Moines competed for the county seat. They all sent representatives to the Iowa Territorial Legislature in 1845 to lobby the legislators to establish the boundaries of Polk County, named after James K. Polk, the 11th president of the United States. On January 13, 1845, the Legislature passed an Act establishing the boundaries of Polk County. The delegation from Brooklyn returned home confident that they had captured the county seat. The delegation from Fort Des Moines had other plans, however. Four days later they succeeded in securing an amendment to a supplementary bill that altered the boundaries of Polk County once more. This was done so that Fort Des Moines would be nearer to the geographical center than Brooklyn. It was accomplished by "borrowing" 144 square miles of territory from Warren County. Three commissioners were appointed to establish the county seat. Since Fort Des Moines was centrally located, it was chosen as the county seat on May 25, 1846. The town of Brooklyn is now part of Des Moines.

In 1849, when Warren County was organized, the residents of Warren County ordered the land "borrowed" by Polk County returned. In 1853 the Legislature did just that, except for a few sections in Camp Township, which is in the southeastern portion of Polk County.

2.1.5. OCCUPATIONS

Polk County is home to many industries and occupations. The combination of a healthy urban core surrounded by rich agricultural land enables Polk County to offer a wide variety of occupational prospects. The table below provides more detailed occupation statistics for the incorporated communities and Polk County as a whole.

Table 6 - 2022 Occupation Statistics for Polk County, Iowa

Place	Management, Business, Science, and Arts Occupations	Service Occupations	Sales and Office Occupations	Natural Resources, Construction, and Maintenance Occupations	Production, Transportation, and Material Moving Occupations
Polk County	44.0%	14.9%	21.3%	7.3%	12.5%
Alleman	54.0%	7.6%	19.2%	9.8%	9.4%
Altoona	43.5%	13.1%	24.7%	6.0%	12.7%
Ankeny	52.5%	11.2%	20.9%	6.6%	8.8%
Bondurant	51.4%	13.2%	21.0%	7.0%	7.4%
Carlisle	40.9%	12.3%	23.0%	9.0%	14.8%
Clive	53.1%	11.7%	23.2%	2.7%	9.5%
Delaware Township	*Data not available at the township level*				
Des Moines	36.2%	18.0%	21.2%	8.5%	16.0%
Elkhart	31.8%	17.6%	12.8%	18.0%	19.7%
Granger	55.8%	7.2%	21.1%	9.0%	7.0%
Grimes	53.1%	11.6%	18.6%	7.7%	9.1%
Johnston	59.6%	11.5%	17.5%	6.3%	5.2%
Mitchellville	30.7%	21.2%	16.7%	16.2%	15.2%
Norwalk	47.6%	13.3%	19.5%	6.0%	13.5%
Pleasant Hill	45.8%	15.4%	20.5%	8.3%	10.1%
Polk City	53.6%	8.2%	16.8%	2.4%	19.1%
Runnells	26.4%	12.0%	21.2%	26.9%	13.5%
Saylor Township	*Data not available at the township level*				
Sheldahl	36.1%	23.1%	7.7%	8.3%	24.9%
Urbandale	52.4%	11.1%	22.2%	4.7%	9.6%
West Des Moines	54.5%	12.3%	20.7%	3.6%	8.8%
Windsor Heights	41.9%	14.0%	26.0%	8.8%	9.4%

Source: U.S. Census, 2022 American Community Survey, 5-year Estimates

2.1.6. AGRICULTURE

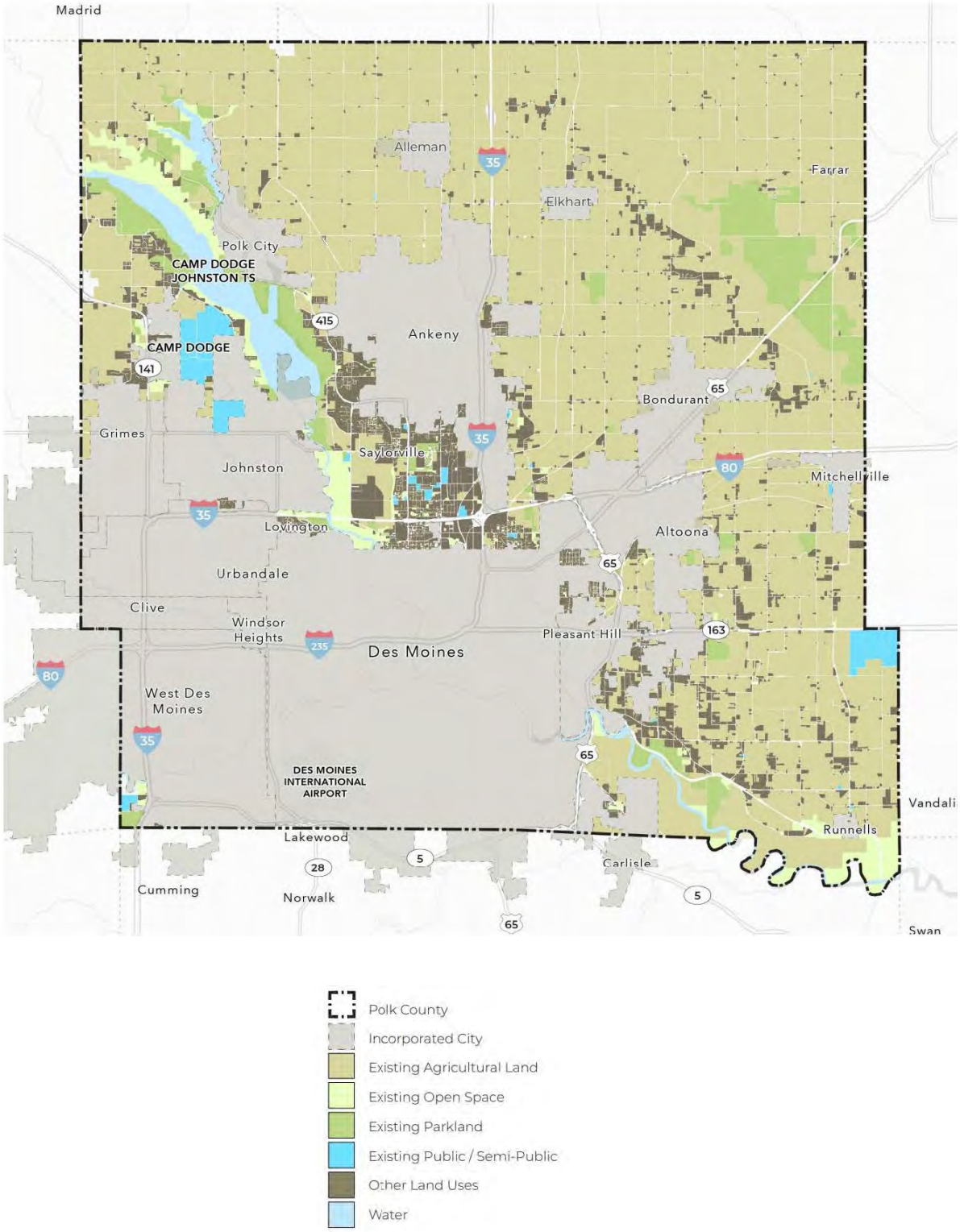
Although Polk County has a larger urban core than other counties in Iowa, agriculture is a key component of the county's character, economy, and history. According to the most recent edition of the U.S. Department of Agriculture's (USDA) Census of Agriculture 2022, there are an estimated 768 farms in Polk County which occupy approximately 179,322 acres of county land. The number of farms has remained relatively stable, with a slight increase. In 2017, there were 755 farms, and by 2022, this number had marginally risen to 768. Despite this steady number of farms, the average size of these farms in acres has experienced a slight decrease. In 2017, the average farm size was 257 acres, which reduced to 233 acres by 2022. Between 2017 and 2022, the county's agricultural sector witnessed substantial growth. Total sales escalated from $110,888,000 to $161,129,000, marking a significant increase. Simultaneously, the average sales per farm rose from $146,872 to $209,804, reflecting improved financial performance and productivity of individual farms over the five-year span.

Table 7 - Polk County 2022 Census of Agriculture Selected Statistics

Number of Farms	768
Land in Farms (acres)	179,332
Average Size of Farm (acres)	233
Market Value of Products Sold ($)	161,129,000
Market Value of Products Sold per Farm ($)	209,804
Total Producers	1,520
Producers Aged 34 and under	156
Producers Aged 35-64	747
Producers Aged 65 and Older	526

Source: U.S. Department of Agriculture 2022 Census of Agriculture

Figure 9. Unincorporated Polk County Agriculture, Parks, and Open Space



2.2. COUNTY AND MUNICIPAL CAPABILITY ASSESSMENT

This section includes individual profiles for the county, municipalities, school districts, and utility that participated in this plan. Each jurisdiction was given a "capability assessment worksheet" that asked for both a self-assessment of their capability and specific details about the resources and expertise available to them in four areas:

- Staff and Technical Assistance
- Planning Mechanisms
- Regulatory Tools and Programs
- Fiscal Capacity

An important function of this assessment is identifying capabilities that these communities *do not* currently have access to. Items marked as "no" in each of the profiles represent opportunities for these communities to expand and improve upon their capabilities and increase the overall ability to achieve mitigation in Polk County. The unincorporated county is profiled first, followed by the incorporated cities, townships, Des Moines Water Works, and school districts.

2.2.1. UNINCORPORATED POLK COUNTY

The jurisdiction of Polk County includes all unincorporated areas within the County boundaries. The Polk County government structure is a County Board of Supervisors with five members.

Chapter 29C of the Code of Iowa creates the State Emergency Management Division and the local Emergency Management Commissions. The Polk County Emergency Management Commission is made up of the mayors of all the jurisdictions in Polk County, one member of the Polk County Board of Supervisors, and the Sheriff. The Commission appoints an Emergency Management Director to manage the agency and assist the Commission. In addition:

- Polk County has several outdoor warning sirens which are activated by the Polk County Sheriff's Office. Alert Iowa is the State of Iowa's official emergency notification system. Through Alert Iowa, State and local officials are able to utilize a single, statewide notification system that provides local control of how and when to disseminate emergency and public safety messages to residents. Residents can sign up for these voluntary alerts via text, email, and/or voice message.
- The County utilizes Alert Iowa system for alerting.

2.2.1.1. STAFF AND TECHNICAL ASSISTANCE

Staff or Personnel Resource	Yes	No	Department or Single Staff Member	Comments
Emergency Manager	X		Department	Emergency Management
Engineers or professionals trained in construction practices related to buildings and/or infrastructure	X		Department	Public Works
Environmental Justice Specialists	X			Allison Van Pelt
Fiscal Management or Procurement Specialists	X		Department	Accounting and Procurement
Floodplain Manager	X		Department	Public Works
Housing Specialist(s)	X		Department	Community Youth & Family Svcs
Land Surveyors		X		
Land Use/Management/Development Planning	X		Department	Public Works
Planners or engineers with an understanding of natural and/or human-caused hazards	X		Department(s)	Public Works, EMA, PH, Conservation
Recreation/Green Space Specialist(s)	X		Department	Conservation

Staff or Personnel Resource	Yes	No	Department or Single Staff Member	Comments
Resource Development Staff or Grant-writing	X		Department(s)	EMA, HR, Public Works, Conservation
Scientists familiar with the hazards of the community	X		Department	National Weather Service
Staff experienced with Geographic Information Systems (GIS) or HAZUS	X		Department(s)	County GIS, Public Works
Staff with education or expertise to assess the community's vulnerability to hazards	X		Department(s)	EMA, Public Works
Transportation Manager / Traffic Engineer	X		Department	Public Works

2.2.1.2. PLANNING MECHANISMS

Plans	In Place		Adopted/ Updated	Under Development		Expected Completion
	Y	N		Yes	No	
Comprehensive Plan (Polk 2050)	X					
Climate Action Plan/Resiliency Plan		X		X		2024, 2025
Community Wildfire Protection Plan (CWPP)		X			X	
Comprehensive Emergency Management Plan	X					
General Plan	X					
Continuity of Operations Plan (COOP)	X					
Disaster Recovery Plan		X		X		
Economic Development Plan	X					
Emergency Operations Plan (EOP)	X					
Environmental Impact Report (EIR)	X					
Evacuation Plan		X			X	
Flood Response Plan	X					
Floodplain Management Plan/Flood Mitigation Plan	X					
Hazard Mitigation Plan	X					
Historic Preservation Plan		X			X	
Natural Resource Protection Plan (NRPP)	X					
Open Space Management Plan	X					
Threat Hazard Identification and Risk Assessment (THIRA)	X					

2.2.1.3. REGULATORY TOOLS AND PROGRAMS

Tool or Program	In Place		Adopted/ Updated	Under Development		Expect to Implement
	Y	N		Yes	No	
Building Codes	X					
Citizen Corps - Community Emergency Response Team		X			X	
Community Rating System (CRS Program of the NFIP)		X			X	
Emergency Management Accreditation Program (EMAP)		X			X	
Fire Code	X					
Firewise Community		X			X	
Floodplain Management/Flood Damage Prevention Ordinance	X					
Land Use/Development Planning	X					
National Flood Insurance Program (NFIP)	X					
Post Disaster Redevelopment/Reconstruction Plan/Ordinance		X			X	
Storm Ready	X					
Stormwater Management Plan/Ordinance		X			X	
Subdivision Regulations/Ordinance		X			X	
Unified Development Ordinance		X			X	
Zoning Ordinance	X					

2.2.1.4. FISCAL CAPACITY

Fiscal Resource	Never Used	Previously Used	Currently Used	Comments
Capital Improvement Programming		X	X	
Community Development Block Grants (CDBG)		X	X	
Development Impact Fees				Not Provided
FEMA Hazard Mitigation Assistance Grants (HMGP, FMA, PDM)		X	X	
Gas/Electric Utility Fees	X			
General Obligation, Revenue, and/or Special Tax Bonds		X	X	
Homeland Security Grants (HSGP)		X	X	
Infrastructure Investment and Jobs Act (IIJA)		X	X	
Infrastructure State Revolving Fund loan		X		
Partnering Agreements or Intergovernmental Agreements		X	X	
Sewer/Water Fees	X			
Special Purpose Taxes (or taxing districts)			X	

Fiscal Resource	Never Used	Previously Used	Currently Used	Comments
Stormwater Utility Fees			X	
USDA Grants		X	X	
USDA Rural Development Agency Grants		X		
US Economic Development Administration Grants				Not Provided

2.2.1.5. SELF-ASSESSMENT OF CAPABILITY

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability		X	
Administrative and Technical Capability	X (Conservation)	X (EMA/PH)	X (PW)
Fiscal Capability		X	X (PW)
Available Staff	X (Conservation/PW)	X (EMA/PH)	
Political Support/Interest	X (Conservation)	X	
Community Support	X (Public Health)	X	

2.2.2. CITY OF ALLEMAN

The City of Alleman is located in northern Polk County. It is governed by a Mayor and 5-member Council. According to the latest U.S. Census, the population of Alleman was approximately 423 persons in 2020. Census data indicates that the population of Alleman decreased by 9 people between 2010 and 2020.

Specific initiatives/capabilities include:

- Residents receive information regarding water use from Des Moines Water Works.
- Alleman has two outdoor warning sirens, one at each end of town. The sirens are activated through Polk County Dispatch.

2.2.2.1. STAFF AND TECHNICAL ASSISTANCE

Staff or Personnel Resource	Yes	No	Department or Single Staff Member	Comments
Emergency Manager	X		Single Staff Member	
Engineers or professionals trained in construction practices related to buildings and/or infrastructure	X		Department	Third Party - Veenstra & Kimm, Inc
Environmental Justice Specialists	X		Not Provided	Available through Polk County
Fiscal Management or Procurement Specialists	X		Department	Third Party – Schnurr & Company, LLP
Floodplain Manager	X		Not Provided	
Housing Specialist(s)		X		
Land Surveyors		X		
Land Use/Management/Development Planning	X		Department	Third Party - Veenstra & Kimm, Inc
Planners or engineers with an understanding of natural and/or human-caused hazards	X		Department	Third Party - Veenstra & Kimm, Inc
Recreation/Green Space Specialist(s)	X		Not Provided	Available through Polk County
Resource Development Staff or Grant-writing	X		Department	Mid-Iowa Council
Scientists familiar with the hazards of the community		X		
Staff experienced with Geographic Information Systems (GIS) or HAZUS	X		Department	Third Party - Veenstra & Kimm, Inc
Staff with education or expertise to assess the community's vulnerability to hazards		X		
Transportation Manager / Traffic Engineer	X		Department	Third Party - Veenstra & Kimm, Inc

2.2.2.2. PLANNING MECHANISMS

Plans	In Place		Adopted/ Updated	Under Development		Expected Completion
	Y	N		Yes	No	
Comprehensive Plan (Polk 2050)		X			X	
Climate Action Plan/Resiliency Plan		X			X	
Community Wildfire Protection Plan (CWPP)		X			X	
Comprehensive Emergency Management Plan		X			X	
General Plan	X		2020			
Continuity of Operations Plan (COOP)		X			X	
Disaster Recovery Plan		X			X	
Economic Development Plan		X			X	
Emergency Operations Plan (EOP)		X			X	
Environmental Impact Report (EIR)		X			X	
Evacuation Plan		X			X	
Flood Response Plan		X			X	
Floodplain Management Plan/Flood Mitigation Plan		X			X	
Hazard Mitigation Plan		X			X	
Historic Preservation Plan		X			X	
Natural Resource Protection Plan (NRPP)		X			X	
Open Space Management Plan		X			X	
Threat Hazard Identification and Risk Assessment (THIRA)		X			X	

2.2.2.3. REGULATORY TOOLS AND PROGRAMS

Tool or Program	In Place		Adopted/ Updated	Under Development		Expect to Implement
	Y	N		Yes	No	
Building Codes (UBC)	X		2020			
Citizen Corps - Community Emergency Response Team		X			X	
Community Rating System (CRS Program of the NFIP)		X			X	
Emergency Management Accreditation Program (EMAP)		X			X	
Fire Code	X					
Firewise Community		X			X	
Floodplain Management/Flood Damage Prevention Ordinance		X	2020		X	

Tool or Program	In Place		Adopted/ Updated	Under Development		Expect to Implement
	Y	N		Yes	No	
Land Use/Development Planning	X		2020			
National Flood Insurance Program (NFIP)	X					
Post Disaster Redevelopment/Reconstruction Plan/Ordinance		X			X	
Storm Ready		X			X	
Stormwater Management Plan/Ordinance		X			X	
Subdivision Regulations/Ordinance	X		2020			
Unified Development Ordinance		X			X	
Zoning Ordinance	X		2020			

2.2.2.4. FISCAL CAPACITY

Fiscal Resource	Never Used	Previously Used	Currently Used	Comments
Capital Improvement Programming	X			
Community Development Block Grants (CDBG)	X			
Development Impact Fees	X			
FEMA Hazard Mitigation Assistance Grants (HMGP, FMA, PDM)			X	2018
Gas/Electric Utility Fees			X	
General Obligation, Revenue, and/or Special Tax Bonds	X			
Homeland Security Grants (HSGP)	X			
Infrastructure Investment and Jobs Act (IIJA)	X			
Infrastructure State Revolving Fund loan			X	Water Loans
Partnering Agreements or Intergovernmental Agreements			X	
Sewer/Water Fees	X			
Special Purpose Taxes (or taxing districts)	X			
Stormwater Utility Fees	X			
USDA Grants	X			
USDA Rural Development Agency Grants	X			
US Economic Development Administration Grants	X			

2.2.2.5. SELF-ASSESSMENT OF CAPABILITY

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability	X		

Area	Degree of Capability		
	Limited	Moderate	High
Administrative and Technical Capability	X		
Fiscal Capability	X		
Available Staff	X		
Political Support/Interest	X		
Community Support			X

2.2.3. CITY OF ALTOONA

The City of Altoona is located in the eastern half of Polk County approximately 5 miles northeast of Des Moines. The community is governed by a Mayor, 5-member Council, and a City Administrator. As of 2020, the population of the City of Altoona was 19,565. The City of Altoona's population grew by 34.6% between 2010 and 2020, adding more than 5,000 individuals.

Specific initiatives/capabilities include:

- The City participates in the Metro Water group that promotes wise water use.
- The City publishes a newsletter and hosts a website that can be used for public information.
- The City participates in the Iowa Stormwater Education Partnership which provides public information.
- Altoona has 11 outdoor warning sirens which are activated by Polk County Dispatch.
- The City utilizes a reverse 911 system.
- The City has designated church basements and elementary schools as tornado shelters.

2.2.3.1. STAFF AND TECHNICAL ASSISTANCE

Staff or Personnel Resource	Yes	No	Department or Single Staff Member	Comments
Emergency Manager	X		Single Staff Member	Fire Chief/Police Chief
Engineers or professionals trained in construction practices related to buildings and/or infrastructure	X		Department(s)	Engineering; Building. Specialized structures would need an external engineer.
Environmental Justice Specialists		X		
Fiscal Management or Procurement Specialists	X		Department	Finance
Floodplain Manager	X		Department	Engineering
Housing Specialist(s)	X		Department	Building
Land Surveyors		X		Basic Topo
Land Use/Management/Development Planning	X		Department	Community Development

Staff or Personnel Resource	Yes	No	Department or Single Staff Member	Comments
Planners or engineers with an understanding of natural and/or human-caused hazards	X		Department	Engineering
Recreation/Green Space Specialist(s)	X		Department	Parks
Resource Development Staff or Grant-writing	X		Department	Finance
Scientists familiar with the hazards of the community		X		
Staff experienced with Geographic Information Systems (GIS) or HAZUS	X		Department	IT
Staff with education or expertise to assess the community's vulnerability to hazards	X		Department	Fire
Transportation Manager / Traffic Engineer	X		Department	Engineering

2.2.3.2. PLANNING MECHANISMS

Plans	In Place		Adopted/ Updated	Under Development		Expected Completion
	Y	N		Yes	No	
Comprehensive Plan (Polk 2050)		X		X		
Climate Action Plan/Resiliency Plan		X		X		
Community Wildfire Protection Plan (CWPP)		X			X	
Comprehensive Emergency Management Plan	X					
General Plan	X					
Continuity of Operations Plan (COOP)	X					
Disaster Recovery Plan	X					
Economic Development Plan	X					
Emergency Operations Plan (EOP)	X					
Environmental Impact Report (EIR)		X			X	
Evacuation Plan	X					
Flood Response Plan	X					
Floodplain Management Plan/Flood Mitigation Plan	X					
Hazard Mitigation Plan	X					
Historic Preservation Plan		X			X	
Natural Resource Protection Plan (NRPP)	X					
Open Space Management Plan		X			X	
Threat Hazard Identification and Risk Assessment (THIRA)	X					

2.2.3.3. REGULATORY TOOLS AND PROGRAMS

Tool or Program	In Place		Adopted/ Updated	Under Development		Expect to Implement
	Y	N		Yes	No	
Building Codes	X		2018 IPC, IFC, IPC/ZUPC, IFCG, 2018 IMC, 2018 IEBC, 2020 NEC			
Citizen Corps - Community Emergency Response Team		X			X	
Community Rating System (CRS Program of the NFIP)		X			X	
Emergency Management Accreditation Program (EMAP)		X			X	
Fire Code	X		2018 IFC			
Firewise Community		X			X	
Floodplain Management/Flood Damage Prevention Ordinance	X		Updated 6/19/2023			
Land Use/Development Planning	X					
National Flood Insurance Program (NFIP)	X					
Post Disaster Redevelopment/Reconstruction Plan/Ordinance	X					
Storm Ready		X			X	
Stormwater Management Plan/Ordinance	X					
Subdivision Regulations/Ordinance	X					
Unified Development Ordinance	X					
Zoning Ordinance	X					

2.2.3.4. FISCAL CAPACITY

Fiscal Resource	Never Used	Previously Used	Currently Used	Comments
Capital Improvement Programming			X	Updated with annual budget
Community Development Block Grants (CDBG)	X			
Development Impact Fees			X	
FEMA Hazard Mitigation Assistance Grants (HMGP, FMA, PDM)		X		
Gas/Electric Utility Fees	X			
General Obligation, Revenue, and/or Special Tax Bonds			X	
Homeland Security Grants (HSGP)		X		
Infrastructure Investment and Jobs Act (IIJA)			X	

Fiscal Resource	Never Used	Previously Used	Currently Used	Comments
Infrastructure State Revolving Fund loan		X		
Partnering Agreements or Intergovernmental Agreements			X	
Sewer/Water Fees			X	
Special Purpose Taxes (or taxing districts)	X			
Stormwater Utility Fees			X	
USDA Grants	X			
USDA Rural Development Agency Grants	X			
US Economic Development Administration Grants	X			

2.2.3.5. SELF-ASSESSMENT OF CAPABILITY

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability		X	
Administrative and Technical Capability		X	
Fiscal Capability		X	
Available Staff		X	
Political Support/Interest		X	
Community Support		X	

2.2.4. CITY OF ANKENY

The City of Ankeny is roughly in the center of Polk County. It is governed by a mayor and 5-member council. The City of Ankeny had a 2020 population of 67,877, which is an increase of 22,305 from the community's 2010 population. The City of Ankeny is one of several communities in the Des Moines metropolitan area which have experienced significant population growth in recent decades.

Specific initiatives/capabilities include:

- Ankeny provides periodic public notices and educational articles on fire prevention.
- The Police Department provides both bicycle safety programs and Child Safety Seat training.
- Ankeny Communication Office, Polk County EMA and Polk County Health Department provide media articles on winter storms, heat, health, and infectious control awareness.
- Ankeny completed the Westwind Reconstruction Project for storm sewer erosion control.
- The City of Ankeny has 21 outdoor warning sirens.

2.2.4.1. STAFF AND TECHNICAL ASSISTANCE

Staff or Personnel Resource	Yes	No	Department or Single Staff Member	Comments
Emergency Manager		X		No dedicated Emergency Manager.
Engineers or professionals trained in construction practices related to buildings and/or infrastructure	X		Not Provided	
Environmental Justice Specialists		X		
Fiscal Management or Procurement Specialists	X		Not Provided	
Floodplain Manager	X		Not Provided	
Housing Specialist(s)	X		Department	Rental Housing Inspectors
Land Surveyors	X		Not Provided	Not Licensed
Land Use/Management/Development Planning	X		Not Provided	
Planners or engineers with an understanding of natural and/or human-caused hazards	X		Not Provided	
Recreation/Green Space Specialist(s)	X		Department	Parks and Recreation

Staff or Personnel Resource	Yes	No	Department or Single Staff Member	Comments
Resource Development Staff or Grant-writing	X		Not Provided	
Scientists familiar with the hazards of the community		X		
Staff experienced with Geographic Information Systems (GIS) or HAZUS	X		Not Provided	
Staff with education or expertise to assess the community's vulnerability to hazards	X		Not Provided	
Transportation Manager / Traffic Engineer	X		Not Provided	

2.2.4.2. PLANNING MECHANISMS

Plans	In Place		Adopted/ Updated	Under Development		Expected Completion
	Y	N		Yes	No	
Comprehensive Plan (Polk 2050)	X		3/2018			
Climate Action Plan/Resiliency Plan		X			X	
Community Wildfire Protection Plan (CWPP)		X			X	
Comprehensive Emergency Management Plan	X		7/2021			
General Plan	X					
Continuity of Operations Plan (COOP)	X					
Disaster Recovery Plan	X					
Economic Development Plan	X					
Emergency Operations Plan (EOP)	X		7/2021			
Environmental Impact Report (EIR)		X			X	
Evacuation Plan		X			X	
Flood Response Plan		X			X	
Floodplain Management Plan/Flood Mitigation Plan	X					
Hazard Mitigation Plan		X			X	
Historic Preservation Plan		X			X	
Natural Resource Protection Plan (NRPP)		X			X	
Open Space Management Plan	X		Parks Master Plan			
Threat Hazard Identification and Risk Assessment (THIRA)	X					

2.2.4.3. REGULATORY TOOLS AND PROGRAMS

Tool or Program	In Place		Adopted/ Updated	Under Development		Expect to Implement
	Y	N		Yes	No	
Building Codes	X		UBC 2021			
Citizen Corps - Community Emergency Response Team		X			X	
Community Rating System (CRS Program of the NFIP)		X		X		2024
Emergency Management Accreditation Program (EMAP)		X			X	
Fire Code	X		IFC 2021			
Firewise Community		X			X	
Floodplain Management/Flood Damage Prevention Ordinance	X		2022			
Land Use/Development Planning	X			X		2024
National Flood Insurance Program (NFIP)	X					
Post Disaster Redevelopment/Reconstruction Plan/Ordinance		X			X	
Storm Ready		X			X	
Stormwater Management Plan/Ordinance	X					Not fully adopted
Subdivision Regulations/Ordinance	X					
Unified Development Ordinance		X			X	
Zoning Ordinance	X			X		2024

2.2.4.4. FISCAL CAPACITY

Fiscal Resource	Never Used	Previously Used	Currently Used	Comments
Capital Improvement Programming			X	
Community Development Block Grants (CDBG)	X			
Development Impact Fees	X			Water and Sewer Connections
FEMA Hazard Mitigation Assistance Grants (HMGP, FMA, PDM)		X		
Gas/Electric Utility Fees			X	
General Obligation, Revenue, and/or Special Tax Bonds			X	

Fiscal Resource	Never Used	Previously Used	Currently Used	Comments
Homeland Security Grants (HSGP)	X			
Infrastructure Investment and Jobs Act (IIJA)	X			
Infrastructure State Revolving Fund loan			X	
Partnering Agreements or Intergovernmental Agreements			X	
Sewer/Water Fees			X	
Special Purpose Taxes (or taxing districts)	X			
Stormwater Utility Fees			X	
USDA Grants	X			
USDA Rural Development Agency Grants	X			
US Economic Development Administration Grants	X			

2.2.4.5. SELF-ASSESSMENT OF CAPABILITY

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability			X
Administrative and Technical Capability			X
Fiscal Capability			X
Available Staff		X	
Political Support/Interest		X	
Community Support		X	

2.2.5. CITY OF BONDURANT

The City of Bondurant is located in the eastern half of Polk County, roughly north of Altoona and East of Ankeny. The community is governed by a Mayor and 5-member council. The 2020 population of the City of Bondurant was 7,365, and Bondurant's population growth rate of 90.8% between 2010 and 2020 is the highest among all incorporated Polk County communities during that time.

Specific initiatives/capabilities include:

- The Fire Department conducts safety sessions annually, primarily at school facilities.
- Bondurant has 4 outdoor warning sirens which are activated by the Polk County Dispatch.
- The City has a designated public tornado shelter/safe room located at the Bondurant Recreation Sports Complex.

2.2.5.1. STAFF AND TECHNICAL ASSISTANCE

Staff or Personnel Resource	Yes	No	Department or Single Staff Member	Comments
Emergency Manager		X		We rely heavily on Polk County
Engineers or professionals trained in construction practices related to buildings and/or infrastructure		X		Contract service
Environmental Justice Specialists	X		Single Staff	
Fiscal Management or Procurement Specialists	X		Department	
Floodplain Manager	X		Department	Also contracted service
Housing Specialist(s)		X		
Land Surveyors		X		Contracted service
Land Use/Management/Development Planning	X		Department	
Planners or engineers with an understanding of natural and/or human-caused hazards	X		Department	
Recreation/Green Space Specialist(s)	X		Department	
Resource Development Staff or Grant-writing	X		Single Staff	
Scientists familiar with the hazards of the community		X		
Staff experienced with Geographic Information Systems (GIS) or HAZUS		X		Contracted service
Staff with education or expertise to assess the community's vulnerability to hazards	X		Department	

Staff or Personnel Resource	Yes	No	Department or Single Staff Member	Comments
Transportation Manager / Traffic Engineer		X		Contracted service

2.2.5.2. PLANNING MECHANISMS

Plans	In Place		Adopted/ Updated	Under Development		Expected Completion
	Y	N		Yes	No	
Comprehensive Plan (Polk 2050)	X					
Climate Action Plan/Resiliency Plan	X					
Community Wildfire Protection Plan (CWPP)	X					
Comprehensive Emergency Management Plan	X					
General Plan	X					
Continuity of Operations Plan (COOP)	X					
Disaster Recovery Plan	X					
Economic Development Plan	X					
Emergency Operations Plan (EOP)	X					
Environmental Impact Report (EIR)	X					
Evacuation Plan	X					
Flood Response Plan	X					
Floodplain Management Plan/Flood Mitigation Plan	X					
Hazard Mitigation Plan	X					
Historic Preservation Plan	X					
Natural Resource Protection Plan (NRPP)	X					
Open Space Management Plan	X					
Threat Hazard Identification and Risk Assessment (THIRA)	X					

2.2.5.3. REGULATORY TOOLS AND PROGRAMS

Tool or Program	In Place		Adopted/ Updated	Under Development		Expect to Implement
	Y	N		Yes	No	
Building Codes	X		2023			
Citizen Corps - Community Emergency Response Team		X			X	
Community Rating System (CRS Program of the NFIP)	X					
Emergency Management Accreditation Program (EMAP)	X					

Tool or Program	In Place		Adopted/ Updated	Under Development		Expect to Implement
	Y	N		Yes	No	
Fire Code	X		2023			
Firewise Community		X			X	
Floodplain Management/Flood Damage Prevention Ordinance	X					
Land Use/Development Planning	X		2023			
National Flood Insurance Program (NFIP)	X					
Post Disaster Redevelopment/Reconstruction Plan/Ordinance	X					
Storm Ready	X					
Stormwater Management Plan/Ordinance	X		2023			
Subdivision Regulations/Ordinance	X					
Unified Development Ordinance	X					
Zoning Ordinance	X					

2.2.5.4. FISCAL CAPACITY

Fiscal Resource	Never Used	Previously Used	Currently Used	Comments
Capital Improvement Programming			X	
Community Development Block Grants (CDBG)			X	
Development Impact Fees			X	
FEMA Hazard Mitigation Assistance Grants (HMGP, FMA, PDM)		X		
Gas/Electric Utility Fees			X	
General Obligation, Revenue, and/or Special Tax Bonds			X	
Homeland Security Grants (HSGP)		X		
Infrastructure Investment and Jobs Act (IIJA)				
Infrastructure State Revolving Fund loan		X	X	
Partnering Agreements or Intergovernmental Agreements			X	
Sewer/Water Fees			X	
Special Purpose Taxes (or taxing districts)			X	
Stormwater Utility Fees			X	
USDA Grants		X		
USDA Rural Development Agency Grants		X		
US Economic Development Administration Grants		X		

2.2.5.5. SELF-ASSESSMENT OF CAPABILITY

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability		X	
Administrative and Technical Capability		X	
Fiscal Capability		X	
Available Staff	X		
Political Support/Interest		X	
Community Support		X	

2.2.6. CITY OF CLIVE

The City of Clive is roughly located along the southwestern boundary of Polk County between Urbandale and West Des Moines. The community is governed by a Mayor and 5-member council. The population of the City of Clive in 2020 was 18,601 (7,576 in Dallas County and 11,025 in Polk County). The Population of Clive increased by 3,154 between 2010 and 2020, with growth taking primarily in the portions of the city in Dallas County.

Specific initiatives/capabilities include:

- The City provides public education through newsletters, bill stuffers and brochures that cover the effects of storm water to include flooding and water quality.
- The City is actively engaged in the acquisition of flood-prone properties as part of the Greenbelt Park expansion. The city currently owns approximately 49% of the land within the SFHA. 21 at-risk buildings have been removed since 2018, with 48 remaining.
- Clive built a concrete flood protection wall around its distribution pumping station on University Boulevard, has purchased several water bladders to aid in restraining Walnut Creek flood water at University Boulevard, and has purchased a flat bottom shallow water rescue boat.
- The Clive EOC has redundant internet and electrical systems (including backup generator).
- Clive has 10 outdoor warning sirens. Seven are specific to Clive, one is shared with and located in the city of Urbandale, and one is shared with and located in Waukee.
- Clive is a partner in the Early Warning Flood Alert System along Walnut Creek, which is the basis of the City's Flood Response Plan.
- Clive uses Reverse 911 system governed by AlertIowa.
- The City has a variety of mutual aid agreements to augment emergency response operations.
- The city has multiple source water connections supplying it from several feeds.
- The City is an active participant in the Community Rating System (CRS) program, and is a class 5 community, maintaining an active floodplain

management program and providing flood insurance policyholders within Clive with ongoing cost savings.

- The City has undertaken a wide variety of infrastructure studies in the past ten years, including:
  - RDG Planning & Design Watershed Stream Condition Assessment Report (2014)
  - RDG Planning & Design Walnut Creek Watershed Plan (2016)
  - City of Clive Comprehensive Plan Update (2016)
  - RDG Planning & Design Greenbelt Master Plan (2016)
  - Snyder & Associates Municipal Water Systems Study (2016)
  - Fire/EMS Standards of Coverage Study (2016/17)
  - HR Green City Street Pavement and Specification Study/Plan (2017/18)
  - FEMA Community Rating System Analysis (2018)
  - FEMA Flood Insurance Rate Map Update (2019)
  - Army Corps of Engineers/FEMA-Walnut Creek Flood Loss Avoidance Analysis (2019)
  - McClure Engineering Municipal Sanitary Sewer System Study (2019) Walnut Creek
  - Applied Ecological Services - Greenbelt Vegetation Management Plan (2020)
  - Interfluve Watershed Stream Condition Assessment Report (2020)
  - Indian Hills Sub-Watershed Assessment (2020)
  - Water Resources Master Plan (2022)
  - University Boulevard Flood Mitigation Plan (2022)
  - University Avenue Corridor Master Plan (2023)
  - Silver Jackets- Walnut Creek Flood Loss Avoidance (2023)

2.2.6.1. STAFF AND TECHNICAL ASSISTANCE

Staff or Personnel Resource	Yes	No	Department or Single Staff Member	Comments
Emergency Manager	X		Single Staff Member	Fire Chief
Engineers or professionals trained in construction practices related to buildings and/or infrastructure	X		Department	Public Works
Environmental Justice Specialists		X		
Fiscal Management or Procurement Specialists	X		Department	Administration
Floodplain Manager	X		Department	Community Development
Housing Specialist(s)		X		
Land Surveyors		X		
Land Use/Management/Development Planning	X		Department	Community Development
Planners or engineers with an understanding of natural and/or human-caused hazards	X		Department	Community Development
Recreation/Green Space Specialist(s)	X		Department	Leisure Services
Resource Development Staff or Grant-writing	X		Department	Multiple Departments
Scientists familiar with the hazards of the community		X		
Staff experienced with Geographic Information Systems (GIS) or HAZUS	X		Department	Community Development; GIS Coordinator in IT
Staff with education or expertise to assess the community's vulnerability to hazards	X		Department	Community Development
Transportation Manager / Traffic Engineer		X		

2.2.6.2. PLANNING MECHANISMS

Plans	In Place		Adopted/ Updated	Under Development		Expected Completion
	Y	N		Yes	No	
Comprehensive Plan (Polk 2050)	X		2016			
Climate Action Plan/Resiliency Plan		X			X	
Community Wildfire Protection Plan (CWPP)		X			X	
Comprehensive Emergency Management Plan		X			X	
General Plan		X			X	
Continuity of Operations Plan (COOP)	X		(IT-specific)			
Disaster Recovery Plan		X			X	
Economic Development Plan	X		2013			
Emergency Operations Plan (EOP)		X			X	

Plans	In Place		Adopted/ Updated	Under Development		Expected Completion
	Y	N		Yes	No	
Environmental Impact Report (EIR)		X			X	
Evacuation Plan		X			X	
Flood Response Plan	X		Annually			
Floodplain Management Plan/Flood Mitigation Plan	X		2023			
Hazard Mitigation Plan	X		2019			
Historic Preservation Plan		X			X	
Natural Resource Protection Plan (NRPP)	X		Various			
Open Space Management Plan	X		2016			
Threat Hazard Identification and Risk Assessment (THIRA)		X			X	

2.2.6.3. REGULATORY TOOLS AND PROGRAMS

Tool or Program	In Place		Adopted/ Updated	Under Development		Expect to Implement
	Y	N		Yes	No	
Building Codes	X		2021			
Citizen Corps - Community Emergency Response Team		X			X	
Community Rating System (CRS Program of the NFIP)	X					
Emergency Management Accreditation Program (EMAP)		X			X	
Fire Code	X		2021			
Firewise Community		X			X	
Floodplain Management/Flood Damage Prevention Ordinance	X		2021			
Land Use/Development Planning	X		Ongoing			
National Flood Insurance Program (NFIP)	X		1978			
Post Disaster Redevelopment/Reconstruction Plan/Ordinance		X			X	
Storm Ready	X		County			
Stormwater Management Plan/Ordinance	X		2021			
Subdivision Regulations/Ordinance	X					
Unified Development Ordinance		X			X	
Zoning Ordinance	X		2008			

2.2.6.4. FISCAL CAPACITY

Fiscal Resource	Never Used	Previously Used	Currently Used	Comments
Capital Improvement Programming			X	Reviewed annually
Community Development Block Grants (CDBG)	X			
Development Impact Fees	X			Not allowed under statute
FEMA Hazard Mitigation Assistance Grants (HMGP, FMA, PDM)			X	HMGP, FMA, BRIC
Gas/Electric Utility Fees			X	Franchise Fee
General Obligation, Revenue, and/or Special Tax Bonds			X	GO Bonds
Homeland Security Grants (HSGP)	X			
Infrastructure Investment and Jobs Act (IIJA)			X	
Infrastructure State Revolving Fund loan	X			
Partnering Agreements or Intergovernmental Agreements			X	Extensively leveraged
Sewer/Water Fees			X	
Special Purpose Taxes (or taxing districts)			X	Urban Renewal - TF
Stormwater Utility Fees			X	
USDA Grants	X			
USDA Rural Development Agency Grants	X			
US Economic Development Administration Grants	X			

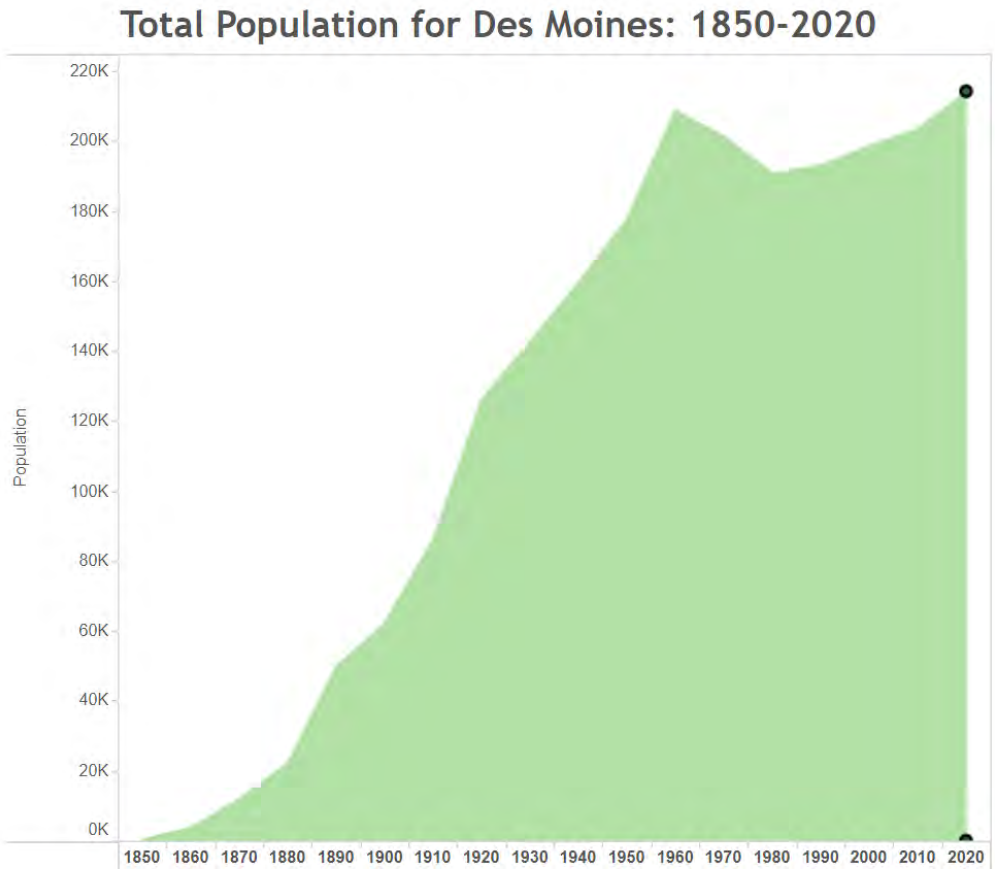
2.2.6.5. SELF-ASSESSMENT OF CAPABILITY

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability			X
Administrative and Technical Capability		X	
Fiscal Capability		X	
Available Staff		X	
Political Support/Interest			X
Community Support		X	

2.2.7. CITY OF DES MOINES

The City of Des Moines is the capital of Iowa and the state's most populous city. In 2020, the estimated population of Des Moines was 214,133, which is an increase of 9,913 since 2010. Des Moines' 5% growth between 2010 and 2020 may look modest when compared to several surrounding communities, but the City's 2020 population estimate is the largest ever documented for the community. Prior to 2020, the largest estimated population for Des Moines across all decennial U.S. censuses since 1850 was in 1960 when the population of Des Moines was estimated to be 208,982. Des Moines is governed by a 7-member council which consists of the City's mayor, two at-large members, and four members representing each of the four wards of the city.

Figure 10. Population of Des Moines 1850 - 2020



Specific initiatives/capabilities include:

- Fire safety/public education programs are provided to schools, senior citizen groups and businesses throughout each year.

- The Des Moines Municipal Housing agency provides periodic fire safety educational sessions to tenants within multi-family units.
- The Des Moines Municipal Housing Agency has a provision within HUD and an approved Agency Plan for both Public Housing and Section 8 to provide pro-rated rental assistance to families that would lose their housing due to natural disasters or through no fault of their own. Additionally, the Des Moines Community Action Agency has historically assisted with income verification and distribution of disaster assistance funds to low-income families, providing referral services and staffing a booth at the FEMA designated command center.
- Des Moines has 28 outdoor warning sirens which are activated by the Polk County.
- Des Moines Public Safety Dispatch has reverse 911 capabilities and Alert Iowa for mass communication by telephone for emergency information.
- The City has a FEMA certified tornado shelter/safe room at the Iowa State Fairgrounds.
- The City is an active participant in the Community Rating System (CRS) program, and is a class 6 community, maintaining an active floodplain management program and providing flood insurance policyholders within Des Moines with ongoing cost savings.
- The City has instituted a Stormwater Master Plan Program that will fund the stormwater needs of the City related to levels of service for flood mitigation, sustainable asset management and water quality improvement. It is a risk-based approach to proactively inspect the City's stormwater infrastructure, prioritized ranking of issues identified, development of projects based on the likelihood and consequence of failure of the assets, and a long-term sustainable program to renew the stormwater infrastructure at the lowest lifecycle cost.

2.2.7.1. STAFF AND TECHNICAL ASSISTANCE

Staff or Personnel Resource	Yes	No	Department or Single Staff Member	Comments
Emergency Manager	X		Department	City Manager, Public Works Director

Engineers or professionals trained in construction practices related to buildings and/or infrastructure	X		Multiple departments	Engineering, Development Services, Fire & Public Works
Environmental Justice Specialists		X		
Fiscal Management or Procurement Specialists	X		Department	Finance
Floodplain Manager	X		Department	Engineering
Housing Specialist(s)	X		Department	Neighborhood services
Land Surveyors	X		Department	Engineering
Land Use/Management/Development Planning	X		Department	Development services
Planners or engineers with an understanding of natural and/or human-caused hazards		X		
Recreation/Green Space Specialist(s)	X		Department	Parks
Resource Development Staff or Grant-writing	X		Multiple departments	Neighborhood Services, Development Services, City Manager Office
Scientists familiar with the hazards of the community		X		
Staff experienced with Geographic Information Systems (GIS) or HAZUS	X		Multiple departments	IT, Development Services, Fire
Staff with education or expertise to assess the community's vulnerability to hazards	X		Multiple Departments	Engineering, Development Services, Fire, Police & Public Works
Transportation Manager / Traffic Engineer	X		Multiple Departments	Engineering

2.2.7.2. PLANNING MECHANISMS

Plans	In Place		Adopted/ Updated	Under Development		Expected Completion
	Y	N		Yes	No	
Comprehensive Plan (Polk 2050)	X		2016	X		2025
Climate Action Plan/Resiliency Plan	X		2024		X	
Community Wildfire Protection Plan (CWPP)		X			X	
Comprehensive Emergency Management Plan	X		Ongoing	X		Ongoing
General Plan		X			X	
Continuity of Operations Plan (COOP)		X			X	2025 (IT)
Disaster Recovery Plan	X		ESF 14		X	
Economic Development Plan		X			X	
Emergency Operations Plan (EOP)		X			X	
Environmental Impact Report (EIR)		X			X	
Evacuation Plan		X			X	
Flood Response Plan	X		Annually	X		Annually
Floodplain Management Plan/Flood Mitigation Plan		X			X	

Plans	In Place		Adopted/ Updated	Under Development		Expected Completion
	Y	N		Yes	No	
Hazard Mitigation Plan	X		2019	X		2024
Historic Preservation Plan	X		2023		X	
Natural Resource Protection Plan (NRPP)		X			X	
Open Space Management Plan		X			X	
Threat Hazard Identification and Risk Assessment (THIRA)	X		2023 (Fire Risk Assessment Document)			

2.2.7.3. REGULATORY TOOLS AND PROGRAMS

Tool or Program	In Place		Adopted/ Updated	Under Development		Expect to Implement
	Y	N		Yes	No	
Building Codes	X		Current – 2021 IBC			
Citizen Corps - Community Emergency Response Team		X			X	
Community Rating System (CRS Program of the NFIP)	X		Joined in 1991, Moved to Class 5 in 2024			
Emergency Management Accreditation Program (EMAP)		X			X	
Fire Code	X		Current – 2021 IFC			
Firewise Community		X			X	
Floodplain Management/Flood Damage Prevention Ordinance	X		Updated 2021			
Land Use/Development Planning	X		Updated 2019			
National Flood Insurance Program (NFIP)	X		1981			
Post Disaster Redevelopment/Reconstruction Plan/Ordinance		X			X	
Storm Ready		X			X	
Stormwater Management Plan/Ordinance	X		Updated 2022			
Subdivision Regulations/Ordinance	X		1970's with ongoing updates			
Unified Development Ordinance		X			X	

Tool or Program	In Place		Adopted/ Updated	Under Development		Expect to Implement
	Y	N		Yes	No	
Zoning Ordinance	X		Updated 2019	X		Ongoing Updates

2.2.7.4. FISCAL CAPACITY

Fiscal Resource	Never Used	Previously Used	Currently Used	Comments
Capital Improvement Programming			X	
Community Development Block Grants (CDBG)			X	
Development Impact Fees	X			
FEMA Hazard Mitigation Assistance Grants (HMGP, FMA, PDM)			X	
Gas/Electric Utility Fees	X			No utilities under management by the city
General Obligation, Revenue, and/or Special Tax Bonds			X	
Homeland Security Grants (HSGP)			X	
Infrastructure Investment and Jobs Act (IIJA)			X	
Infrastructure State Revolving Fund loan			X	
Partnering Agreements or Intergovernmental Agreements			X	
Sewer/Water Fees			X	
Special Purpose Taxes (or taxing districts)			X	
Stormwater Utility Fees			X	
USDA Grants			X	
USDA Rural Development Agency Grants	X			
US Economic Development Administration Grants			X	

2.2.7.5. SELF-ASSESSMENT OF CAPABILITY

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability			X
Administrative and Technical Capability			X
Fiscal Capability		X	
Available Staff		X	
Political Support/Interest		X	
Community Support		X	

2.2.8. CITY OF ELKHART

The City of Elkhart is a small city in northeast Polk County. It is governed by a Mayor and 5-member Council. In 2020, the estimated population of Elkhart was 882, which is an increase of 199 from the community's 2010 estimated population of 683.

Specific initiatives/capabilities include:

- The City produces monthly newsletters to property owners covering fire safety programs.
- The City has one outdoor warning siren that is activated remotely by Polk County Dispatch.

2.2.8.1. STAFF AND TECHNICAL ASSISTANCE

Staff or Personnel Resource	Yes	No	Department or Single Staff Member	Comments
Emergency Manager		X		
Engineers or professionals trained in construction practices related to buildings and/or infrastructure		X		
Environmental Justice Specialists		X		
Fiscal Management or Procurement Specialists		X		
Floodplain Manager		X		
Housing Specialist(s)		X		
Land Surveyors		X		
Land Use/Management/Development Planning		X		
Planners or engineers with an understanding of natural and/or human-caused hazards		X		
Recreation/Green Space Specialist(s)		X		
Resource Development Staff or Grant-writing		X		
Scientists familiar with the hazards of the community		X		
Staff experienced with Geographic Information Systems (GIS) or HAZUS		X		
Staff with education or expertise to assess the community's vulnerability to hazards		X		
Transportation Manager / Traffic Engineer		X		

2.2.8.2. PLANNING MECHANISMS

Plans	In Place		Adopted/ Updated	Under Development		Expected Completion
	Y	N		Yes	No	
Comprehensive Plan (Polk 2050)	X					
Climate Action Plan/Resiliency Plan		X			X	
Community Wildfire Protection Plan (CWPP)		X			X	
Comprehensive Emergency Management Plan	X					
General Plan	X					
Continuity of Operations Plan (COOP)		X			X	
Disaster Recovery Plan	X					
Economic Development Plan	X					
Emergency Operations Plan (EOP)		X			X	
Environmental Impact Report (EIR)	X					
Evacuation Plan	X					
Flood Response Plan	X					
Floodplain Management Plan/Flood Mitigation Plan		X			X	
Hazard Mitigation Plan	X					
Historic Preservation Plan		X			X	
Natural Resource Protection Plan (NRPP)		X			X	
Open Space Management Plan		X			X	
Threat Hazard Identification and Risk Assessment (THIRA)		X			X	

2.2.8.3. REGULATORY TOOLS AND PROGRAMS

Tool or Program	In Place		Adopted/ Updated	Under Development		Expect to Implement
	Y	N		Yes	No	
Building Codes	X		IBC			
Citizen Corps - Community Emergency Response Team		X			X	
Community Rating System (CRS Program of the NFIP)		X			X	
Emergency Management Accreditation Program (EMAP)		X			X	
Fire Code	X					
Firewise Community		X			X	
Floodplain Management/Flood Damage Prevention Ordinance		X			X	
Land Use/Development Planning	X					

Tool or Program	In Place		Adopted/ Updated	Under Development		Expect to Implement
	Y	N		Yes	No	
National Flood Insurance Program (NFIP)		X			X	
Post Disaster Redevelopment/Reconstruction Plan/Ordinance		X			X	
Storm Ready		X			X	
Stormwater Management Plan/Ordinance	X					
Subdivision Regulations/Ordinance	X					
Unified Development Ordinance		X			X	
Zoning Ordinance	X					

2.2.8.4. FISCAL CAPACITY

Fiscal Resource	Never Used	Previously Used	Currently Used	Comments
Capital Improvement Programming			X	
Community Development Block Grants (CDBG)			X	
Development Impact Fees	X			
FEMA Hazard Mitigation Assistance Grants (HMGP, FMA, PDM)			X	
Gas/Electric Utility Fees			X	
General Obligation, Revenue, and/or Special Tax Bonds			X	
Homeland Security Grants (HSGP)			X	
Infrastructure Investment and Jobs Act (IIJA)	X			
Infrastructure State Revolving Fund loan	X			
Partnering Agreements or Intergovernmental Agreements			X	
Sewer/Water Fees			X	
Special Purpose Taxes (or taxing districts)			X	
Stormwater Utility Fees			X	
USDA Grants			X	
USDA Rural Development Agency Grants			X	
US Economic Development Administration Grants			X	

2.2.8.5. SELF-ASSESSMENT OF CAPABILITY

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability			X
Administrative and Technical Capability			X

Area	Degree of Capability		
	Limited	Moderate	High
Fiscal Capability			X
Available Staff	X		
Political Support/Interest		X	
Community Support			X

2.2.9. CITY OF GRIMES

The City of Grimes is a small city in west-central Polk County, and a portion of the community's boundaries stretch into neighboring Dallas County. The City of Grimes is governed by a Mayor, City Administrator, and a 5-member Council. The population of Grimes was estimated to be 15,392 in 2020, and this is a significant increase over the 2010 estimated population of 8,246. Between 2010 and 2020 the population of Grimes increased by approximately 86.7%, which is the second highest growth rate among all incorporated Polk County communities during that time. Only the community of Bondurant grew at a faster rate than the City of Grimes between 2010 and 2020.

Specific initiatives/capabilities include:

- Fire Department provides annual fire prevention training.
- The City has three outdoor warning sirens which are activated by Polk County Dispatch.

2.2.9.1. STAFF AND TECHNICAL ASSISTANCE

Staff or Personnel Resource	Yes	No	Department or Single Staff Member	Comments
Emergency Manager	X		Not Provided	
Engineers or professionals trained in construction practices related to buildings and/or infrastructure	X		Not Provided	
Environmental Justice Specialists		X		
Fiscal Management or Procurement Specialists	X		Not Provided	
Floodplain Manager	X		Single Staff Member	Development Services Director, Planning Division
Housing Specialist(s)		X		
Land Surveyors		X		
Land Use/Management/Development Planning	X		Not Provided	
Planners or engineers with an understanding of natural and/or human-caused hazards	X		Not Provided	
Recreation/Green Space Specialist(s)	X		Not Provided	
Resource Development Staff or Grant-writing	X		Department	Development Services Department and Impac7G (Third-Party)
Scientists familiar with the hazards of the community	X		Not Provided	
Staff experienced with Geographic Information Systems (GIS) or HAZUS	X		Not Provided	

Staff or Personnel Resource	Yes	No	Department or Single Staff Member	Comments
Staff with education or expertise to assess the community's vulnerability to hazards	X		Not Provided	
Transportation Manager / Traffic Engineer	X		Not Provided	

2.2.9.2. PLANNING MECHANISMS

Plans	In Place		Adopted/ Updated	Under Development		Expected Completion
	Y	N		Yes	No	
Comprehensive Plan (Polk 2050)	X					
Climate Action Plan/Resiliency Plan		X			X	
Community Wildfire Protection Plan (CWPP)		X			X	
Comprehensive Emergency Management Plan	X			X		
General Plan		X			X	
Continuity of Operations Plan (COOP)	*Not Provided*					
Disaster Recovery Plan	*Not Provided*					
Economic Development Plan	X					
Emergency Operations Plan (EOP)	X					
Environmental Impact Report (EIR)	*Not Provided*					
Evacuation Plan		X			X	
Flood Response Plan	X					
Floodplain Management Plan/Flood Mitigation Plan	X					
Hazard Mitigation Plan	X					
Historic Preservation Plan		X			X	
Natural Resource Protection Plan (NRPP)		X			X	
Open Space Management Plan		X			X	
Threat Hazard Identification and Risk Assessment (THIRA)		X			X	

2.2.9.3. REGULATORY TOOLS AND PROGRAMS

Tool or Program	In Place		Adopted/ Updated	Under Development		Expect to Implement
	Y	N		Yes	No	
Building Codes	X		ICC 2018	X		ICC 2021 Adoption in 2024
Citizen Corps - Community Emergency Response Team		X			X	

Tool or Program	In Place		Adopted/ Updated	Under Development		Expect to Implement
	Y	N		Yes	No	
Community Rating System (CRS Program of the NFIP)		X			X	
Emergency Management Accreditation Program (EMAP)		X			X	
Fire Code	X		IFC 2018			Adopting 2021 code in 2024
Firewise Community		X			X	
Floodplain Management/Flood Damage Prevention Ordinance	X		2019			
Land Use/Development Planning	X					
National Flood Insurance Program (NFIP)	X					
Post Disaster Redevelopment/Reconstruction Plan/Ordinance		X			X	
Storm Ready		X			X	
Stormwater Management Plan/Ordinance	X					
Subdivision Regulations/Ordinance	X					
Unified Development Ordinance		X			X	
Zoning Ordinance	X					

2.2.9.4. FISCAL CAPACITY

Fiscal Resource	Never Used	Previously Used	Currently Used	Comments
Capital Improvement Programming			X	
Community Development Block Grants (CDBG)			X	
Development Impact Fees	X			
FEMA Hazard Mitigation Assistance Grants (HMGP, FMA, PDM)	X			
Gas/Electric Utility Fees	X			
General Obligation, Revenue, and/or Special Tax Bonds			X	
Homeland Security Grants (HSGP)		X		
Infrastructure Investment and Jobs Act (IIJA)	*Not Provided*			
Infrastructure State Revolving Fund loan			X	
Partnering Agreements or Intergovernmental Agreements			X	
Sewer/Water Fees			X	
Special Purpose Taxes (or taxing districts)	*Not Provided*			
Stormwater Utility Fees			X	
USDA Grants	X			
USDA Rural Development Agency Grants	X			
US Economic Development Administration Grants	X			

2.2.9.5. SELF-ASSESSMENT OF CAPABILITY

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability		X	
Administrative and Technical Capability		X	
Fiscal Capability		X	
Available Staff	X		
Political Support/Interest	*Not Provided*		
Community Support		X	

2.2.10. CITY OF JOHNSTON

The City of Johnston sits northwest of the City of Des Moines in west-central Polk County. It is governed by a Mayor, a City Administrator, and a 5-member Council. The City of Johnston had an estimate population of 24,064 in 2020, and this is an increase of 39.3% over the City of Johnston's 2010 estimated population of 17,278.

Specific initiatives/capabilities include:

- Fire Department provides fire safety tips and home safety as part of open house and through the schools during fire prevention week.
- The City has eight outdoor warning sirens which are activated by Polk County Dispatch.

2.2.10.1. STAFF AND TECHNICAL ASSISTANCE

Staff or Personnel Resource	Yes	No	Department or Single Staff Member	Comments
Emergency Manager	X		Not Provided	
Engineers or professionals trained in construction practices related to buildings and/or infrastructure	X		Not Provided	
Environmental Justice Specialists		X		
Fiscal Management or Procurement Specialists	X		Not Provided	
Floodplain Manager	X		Not Provided	
Housing Specialist(s)	X		Not Provided	
Land Surveyors		X		
Land Use/Management/Development Planning	X		Not Provided	
Planners or engineers with an understanding of natural and/or human-caused hazards	X		Not Provided	
Recreation/Green Space Specialist(s)	X		Not Provided	
Resource Development Staff or Grant-writing	X		Not Provided	
Scientists familiar with the hazards of the community	X		Not Provided	
Staff experienced with Geographic Information Systems (GIS) or HAZUS	X		Not Provided	
Staff with education or expertise to assess the community's vulnerability to hazards	X		Not Provided	
Transportation Manager / Traffic Engineer	X		Not Provided	

2.2.10.2. PLANNING MECHANISMS

Plans	In Place		Adopted/ Updated	Under Development		Expected Completion
	Y	N		Yes	No	
Comprehensive Plan (Polk 2050)	X					
Climate Action Plan/Resiliency Plan		X			X	
Community Wildfire Protection Plan (CWPP)		X			X	
Comprehensive Emergency Management Plan	X					
General Plan	*Not Provided*					
Continuity of Operations Plan (COOP)	*Not Provided*					
Disaster Recovery Plan	*Not Provided*					
Economic Development Plan	X					
Emergency Operations Plan (EOP)	X					
Environmental Impact Report (EIR)	*Not Provided*					
Evacuation Plan		X			X	
Flood Response Plan	X					
Floodplain Management Plan/Flood Mitigation Plan	X					
Hazard Mitigation Plan	X					
Historic Preservation Plan		X			X	
Natural Resource Protection Plan (NRPP)		X			X	
Open Space Management Plan		X			X	
Threat Hazard Identification and Risk Assessment (THIRA)		X			X	

2.2.10.3. REGULATORY TOOLS AND PROGRAMS

Tool or Program	In Place		Adopted/ Updated	Under Development		Expect to Implement
	Y	N		Yes	No	
Building Codes	X		2021 IBC and IRC			
Citizen Corps - Community Emergency Response Team		X			X	
Community Rating System (CRS Program of the NFIP)		X			X	
Emergency Management Accreditation Program (EMAP)		X			X	
Fire Code	X		2021 IFC adopted Nov. 2022	X		2024
Firewise Community		X			X	
Floodplain Management/Flood Damage Prevention Ordinance	X					

Tool or Program	In Place		Adopted/ Updated	Under Development		Expect to Implement
	Y	N		Yes	No	
Land Use/Development Planning	X					
National Flood Insurance Program (NFIP)	X					
Post Disaster Redevelopment/Reconstruction Plan/Ordinance		X			X	
Storm Ready		X			X	
Stormwater Management Plan/Ordinance	X					
Subdivision Regulations/Ordinance	X					
Unified Development Ordinance		X			X	
Zoning Ordinance	X					

2.2.10.4. FISCAL CAPACITY

Fiscal Resource	Never Used	Previously Used	Currently Used	Comments
Capital Improvement Programming			X	
Community Development Block Grants (CDBG)			X	
Development Impact Fees	*Not Provided*			
FEMA Hazard Mitigation Assistance Grants (HMGP, FMA, PDM)	*Not Provided*			
Gas/Electric Utility Fees			X	1% franchise fee
General Obligation, Revenue, and/or Special Tax Bonds			X	
Homeland Security Grants (HSGP)		X		
Infrastructure Investment and Jobs Act (IIJA)	*Not Provided*			
Infrastructure State Revolving Fund loan			X	
Partnering Agreements or Intergovernmental Agreements			X	
Sewer/Water Fees			X	
Special Purpose Taxes (or taxing districts)	*Not Provided*			
Stormwater Utility Fees			X	
USDA Grants	*Not Provided*			
USDA Rural Development Agency Grants	*Not Provided*			
US Economic Development Administration Grants	*Not Provided*			

2.2.10.5. SELF-ASSESSMENT OF CAPABILITY

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability		X	

Area	Degree of Capability		
	Limited	Moderate	High
Administrative and Technical Capability		X	
Fiscal Capability		X	
Available Staff	X		
Political Support/Interest	*Not Provided*		
Community Support		X	

2.2.11. CITY OF MITCHELLVILLE

The City of Mitchellville is located along the eastern edge of Polk County with a small portion stretching into neighboring Jasper County. The community is governed by a mayor and 5-member Council. Between 2010 and 2020, the population of Mitchellville increased from 2,254 to 2,485, which is an increase of approximately 10.2%.

Specific initiatives/capabilities include:

- The City has several programs to include Stop Drop and Roll, Smoke Detector Testing and Battery Replacement, and citizens' police academy.
- The City has one outdoor warning siren, and it is activated by the Polk County Dispatch.
- The City also uses Alert Iowa and Reverse 911.

2.2.11.1. STAFF AND TECHNICAL ASSISTANCE

Staff or Personnel Resource	Yes	No	Department or Single Staff Member	Comments
Emergency Manager		X		Utilize County EMA
Engineers or professionals trained in construction practices related to buildings and/or infrastructure		X		V&K
Environmental Justice Specialists		X		
Fiscal Management or Procurement Specialists		X		Council/City Administrator
Floodplain Manager		X		
Housing Specialist(s)		X		
Land Surveyors		X		V&K
Land Use/Management/Development Planning	X		Department	Planning & zoning Committee/ V&K/City Council
Planners or engineers with an understanding of natural and/or human-caused hazards		X		
Recreation/Green Space Specialist(s)	X		Single Staff	Plus 1 part time
Resource Development Staff or Grant-writing		X		
Scientists familiar with the hazards of the community		X		
Staff experienced with Geographic Information Systems (GIS) or HAZUS	X		Department	Public Works & City Clerk
Staff with education or expertise to assess the community's vulnerability to hazards	X		Department	Police and Fire Departments
Transportation Manager / Traffic Engineer		X		County Public Works

2.2.11.2. PLANNING MECHANISMS

Plans	In Place		Adopted/ Updated	Under Development		Expected Completion
	Y	N		Yes	No	
Comprehensive Plan (Polk 2050)		X			X	
Climate Action Plan/Resiliency Plan		X			X	
Community Wildfire Protection Plan (CWPP)		X		X		
Comprehensive Emergency Management Plan	X					
General Plan		X			X	
Continuity of Operations Plan (COOP)	X					
Disaster Recovery Plan	X					May not be formalized
Economic Development Plan	X					
Emergency Operations Plan (EOP)		X			X	
Environmental Impact Report (EIR)		X			X	
Evacuation Plan		X			X	
Flood Response Plan		X			X	
Floodplain Management Plan/Flood Mitigation Plan		X			X	
Hazard Mitigation Plan	X					
Historic Preservation Plan		X			X	
Natural Resource Protection Plan (NRPP)		X			X	
Open Space Management Plan	X					
Threat Hazard Identification and Risk Assessment (THIRA)	X					

2.2.11.3. REGULATORY TOOLS AND PROGRAMS

Tool or Program	In Place		Adopted/ Updated	Under Development		Expect to Implement
	Y	N		Yes	No	
Building Codes	X		2018 IBC			
Citizen Corps - Community Emergency Response Team		X			X	
Community Rating System (CRS Program of the NFIP)		X			X	
Emergency Management Accreditation Program (EMAP)		X			X	
Fire Code	X					
Firewise Community		X			X	
Floodplain Management/Flood Damage Prevention Ordinance		X			X	
Land Use/Development Planning	X					

Tool or Program	In Place		Adopted/ Updated	Under Development		Expect to Implement
	Y	N		Yes	No	
National Flood Insurance Program (NFIP)	X					
Post Disaster Redevelopment/Reconstruction Plan/Ordinance		X			X	
Storm Ready	X					
Stormwater Management Plan/Ordinance	X					
Subdivision Regulations/Ordinance	X					
Unified Development Ordinance	X					
Zoning Ordinance	X					

2.2.11.4. FISCAL CAPACITY

Fiscal Resource	Never Used	Previously Used	Currently Used	Comments
Capital Improvement Programming			X	
Community Development Block Grants (CDBG)		X		
Development Impact Fees	*Not Provided*			
FEMA Hazard Mitigation Assistance Grants (HMGP, FMA, PDM)	*Not Provided*			
Gas/Electric Utility Fees			X	
General Obligation, Revenue, and/or Special Tax Bonds			X	
Homeland Security Grants (HSGP)	X			
Infrastructure Investment and Jobs Act (IIJA)	X			
Infrastructure State Revolving Fund loan	X			
Partnering Agreements or Intergovernmental Agreements			X	
Sewer/Water Fees			X	
Special Purpose Taxes (or taxing districts)			X	
Stormwater Utility Fees			X	
USDA Grants	*Not Provided*			
USDA Rural Development Agency Grants	*Not Provided*			
US Economic Development Administration Grants	*Not Provided*			

2.2.11.5. SELF-ASSESSMENT OF CAPABILITY

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability			X
Administrative and Technical Capability			X

Area	Degree of Capability		
	Limited	Moderate	High
Fiscal Capability		X	
Available Staff	X		
Political Support/Interest			X
Community Support			X

2.2.12. CITY OF PLEASANT HILL

The City of Pleasant Hill is situated in the southeastern quadrant of Polk County along the eastern edge of Des Moines. It is governed by a Mayor, City Manager and 5-member Council. The population of Pleasant Hill was estimated to be 10,147 in 2020, and this is an increase of 1,362 over the community's 2010 estimated population of 8,785.

Specific initiatives/capabilities include:

- The Pleasant Hill Fire and Police Departments provide education on public safety issues. The Storm Water Coordinator also provides training in areas related to the environment and storm water.
- The City has installed back-up generators at their facilities including city hall, library, police station, fire station and Doanes Park Youth Center. New back-up generators have also been installed at two sanitary sewer lift stations.
- The City constructed a new culvert at 100 Sloans Way.
- The City has eight outdoor warning sirens.
- The City utilizes Reverse 911 as an additional community warning system.

2.2.12.1. STAFF AND TECHNICAL ASSISTANCE

Staff or Personnel Resource	Yes	No	Department or Single Staff Member	Comments
Emergency Manager		X		Polk County EMA
Engineers or professionals trained in construction practices related to buildings and/or infrastructure	X		Department	Commercial and Residential building inspectors in Community Development Department
Environmental Justice Specialists		X		
Fiscal Management or Procurement Specialists	X		Not Provided	
Floodplain Manager	X		Department	Floodplain manager assigned as Senior Building Inspector in Community Development Department
Housing Specialist(s)	X		Not Provided	
Land Surveyors		X		
Land Use/Management/Development Planning	X		Department	
Planners or engineers with an understanding of natural and/or human-caused hazards	X		Department	Community Development Department Staff

Staff or Personnel Resource	Yes	No	Department or Single Staff Member	Comments
Recreation/Green Space Specialist(s)	X		Department	Parks and Recreation Division staffing
Resource Development Staff or Grant-writing	X		Department	Various individuals across City departments
Scientists familiar with the hazards of the community		X		
Staff experienced with Geographic Information Systems (GIS) or HAZUS	X		Department	Various individuals across city departments
Staff with education or expertise to assess the community's vulnerability to hazards	X		Department	Building Inspectors
Transportation Manager / Traffic Engineer		X		

2.2.12.2. PLANNING MECHANISMS

Plans	In Place		Adopted/ Updated	Under Development		Expected Completion
	Y	N		Yes	No	
Comprehensive Plan (Polk 2050)	X					
Climate Action Plan/Resiliency Plan		X			X	
Community Wildfire Protection Plan (CWPP)	X					
Comprehensive Emergency Management Plan	X					
Pleasant Hill Comprehensive Plan	X		2015	X		2024
Continuity of Operations Plan (COOP)		X			X	
Disaster Recovery Plan		X			X	
Economic Development Plan				X		2024
Emergency Operations Plan (EOP)		X			X	
Environmental Impact Report (EIR)		X			X	
Evacuation Plan		X			X	
Flood Response Plan		X			X	
Floodplain Management Plan/Flood Mitigation Plan		X			X	
Hazard Mitigation Plan	X		2019			
Historic Preservation Plan		X			X	
Natural Resource Protection Plan (NRPP)		X			X	
Open Space Management Plan	X		2015			
Threat Hazard Identification and Risk Assessment (THIRA)		X			X	

2.2.12.3. REGULATORY TOOLS AND PROGRAMS

Tool or Program	In Place		Adopted/ Updated	Under Development		Expect to Implement
	Y	N		Yes	No	
Building Codes	X		IBC 2021			
Citizen Corps - Community Emergency Response Team		X			X	
Community Rating System (CRS Program of the NFIP)	X					
Emergency Management Accreditation Program (EMAP)		X			X	
Fire Code	X		IFC 2021			
Firewise Community		X			X	
Floodplain Management/Flood Damage Prevention Ordinance	X					
Land Use/Development Planning	X					
National Flood Insurance Program (NFIP)	X					
Post Disaster Redevelopment/Reconstruction Plan/Ordinance		X			X	
Storm Ready		X			X	
Stormwater Management Plan/Ordinance	X					
Subdivision Regulations/Ordinance	X					
Unified Development Ordinance		X			X	
Zoning Ordinance	X					

2.2.12.4. FISCAL CAPACITY

Fiscal Resource	Never Used	Previously Used	Currently Used	Comments
Capital Improvement Programming			X	
Community Development Block Grants (CDBG)	X			
Development Impact Fees	X			
FEMA Hazard Mitigation Assistance Grants (HMGP, FMA, PDM)			X	
Gas/Electric Utility Fees			X	
General Obligation, Revenue, and/or Special Tax Bonds			X	
Homeland Security Grants (HSGP)		X		
Infrastructure Investment and Jobs Act (IIJA)	X			
Infrastructure State Revolving Fund loan	X			
Partnering Agreements or Intergovernmental Agreements			X	
Sewer/Water Fees			X	
Special Purpose Taxes (or taxing districts)	X			

Fiscal Resource	Never Used	Previously Used	Currently Used	Comments
Stormwater Utility Fees			X	
USDA Grants	X			
USDA Rural Development Agency Grants	X			
US Economic Development Administration Grants	X			

2.2.12.5. SELF-ASSESSMENT OF CAPABILITY

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability			X
Administrative and Technical Capability			X
Fiscal Capability		X	
Available Staff	X		
Political Support/Interest		X	
Community Support		X	

2.2.13. CITY OF POLK CITY

The City of Polk City is located on the north side of Saylorville Lake in the northwest quadrant of Polk County. The community is governed by a mayor and 5-member Council, and it had an estimated 2020 population of 5,543. The community experienced significant growth between 2010 and 2020, gaining roughly 2,125 residents, and its growth rate of 62.2% during that period is 3rd most among incorporated communities in Polk County.

Specific initiatives/capabilities include:

- The City has one outdoor warning siren.

2.2.13.1. STAFF AND TECHNICAL ASSISTANCE

Staff or Personnel Resource	Yes	No	Department or Single Staff Member	Comments
Emergency Manager		X		
Engineers or professionals trained in construction practices related to buildings and/or infrastructure	X		Single Staff Member	
Environmental Justice Specialists		X		
Fiscal Management or Procurement Specialists		X		
Floodplain Manager		X		
Housing Specialist(s)		X		
Land Surveyors		X		
Land Use/Management/Development Planning		X		
Planners or engineers with an understanding of natural and/or human-caused hazards		X		
Recreation/Green Space Specialist(s)		X		
Resource Development Staff or Grant-writing		X		
Scientists familiar with the hazards of the community		X		
Staff experienced with Geographic Information Systems (GIS) or HAZUS		X		
Staff with education or expertise to assess the community's vulnerability to hazards		X		
Transportation Manager / Traffic Engineer		X		

2.2.13.2. PLANNING MECHANISMS

Plans	In Place		Adopted/ Updated	Under Development		Expected Completion
	Y	N		Yes	No	
Comprehensive Plan (Polk 2050)		X			X	
Climate Action Plan/Resiliency Plan		X			X	
Community Wildfire Protection Plan (CWPP)		X			X	
Comprehensive Emergency Management Plan		X			X	
General Plan		X			X	
Continuity of Operations Plan (COOP)		X			X	
Disaster Recovery Plan		X			X	
Economic Development Plan		X			X	
Emergency Operations Plan (EOP)		X			X	
Environmental Impact Report (EIR)		X			X	
Evacuation Plan		X			X	
Flood Response Plan		X			X	
Floodplain Management Plan/Flood Mitigation Plan		X			X	
Hazard Mitigation Plan		X			X	
Historic Preservation Plan		X			X	
Natural Resource Protection Plan (NRPP)		X			X	
Open Space Management Plan		X			X	
Threat Hazard Identification and Risk Assessment (THIRA)		X			X	

2.2.13.3. REGULATORY TOOLS AND PROGRAMS

Tool or Program	In Place		Adopted/ Updated	Under Development		Expect to Implement
	Y	N		Yes	No	
Building Codes	X					
Citizen Corps - Community Emergency Response Team		X			X	
Community Rating System (CRS Program of the NFIP)		X			X	
Emergency Management Accreditation Program (EMAP)		X			X	
Fire Code	X					
Firewise Community		X			X	
Floodplain Management/Flood Damage Prevention Ordinance		X			X	
Land Use/Development Planning	X					

Tool or Program	In Place		Adopted/ Updated	Under Development		Expect to Implement
	Y	N		Yes	No	
National Flood Insurance Program (NFIP)		X			X	
Post Disaster Redevelopment/Reconstruction Plan/Ordinance		X			X	
Storm Ready		X			X	
Stormwater Management Plan/Ordinance	X					
Subdivision Regulations/Ordinance	X					
Unified Development Ordinance		X			X	
Zoning Ordinance	X					

2.2.13.4. FISCAL CAPACITY

Fiscal Resource	Never Used	Previously Used	Currently Used	Comments
Capital Improvement Programming	X			
Community Development Block Grants (CDBG)	X			
Development Impact Fees	X			
FEMA Hazard Mitigation Assistance Grants (HMGP, FMA, PDM)	X			
Gas/Electric Utility Fees	X			
General Obligation, Revenue, and/or Special Tax Bonds	X			
Homeland Security Grants (HSGP)	X			
Infrastructure Investment and Jobs Act (IIJA)	X			
Infrastructure State Revolving Fund loan	X			
Partnering Agreements or Intergovernmental Agreements	X			
Sewer/Water Fees	X			
Special Purpose Taxes (or taxing districts)	X			
Stormwater Utility Fees	X			
USDA Grants	X			
USDA Rural Development Agency Grants	X			
US Economic Development Administration Grants	X			

2.2.13.5. SELF-ASSESSMENT OF CAPABILITY

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability	X		
Administrative and Technical Capability	X		

Area	Degree of Capability		
	Limited	Moderate	High
Fiscal Capability	X		
Available Staff	X		
Political Support/Interest	X		
Community Support	X		

2.2.14. CITY OF RUNNELLS

The City of Runnells is a small city in the southeastern corner of Polk County. The community is governed by a mayor and 5-member Council. The community is among the least populated communities in Polk County, and recent census data reveals that it is one of three Polk County communities which decreased in population between 2010 and 2020. During that stretch, the population of the City of Runnells decreased from 507 to 457. However, the 2020 population of Runnells remains significantly larger than the community's 2000 population of 352.

Specific initiatives/capabilities include:

- The City has one outdoor warning siren.

2.2.14.1. STAFF AND TECHNICAL ASSISTANCE

Staff or Personnel Resource	Yes	No	Department or Single Staff Member	Comments
Emergency Manager	X			County
Engineers or professionals trained in construction practices related to buildings and/or infrastructure	X			County
Environmental Justice Specialists	*Unsure*			
Fiscal Management or Procurement Specialists	*Unsure*			
Floodplain Manager	X			DNR
Housing Specialist(s)		X		
Land Surveyors		X		
Land Use/Management/Development Planning	X			County and Trustees
Planners or engineers with an understanding of natural and/or human-caused hazards	*Unsure*			
Recreation/Green Space Specialist(s)		X		
Resource Development Staff or Grant-writing	*Unsure*			
Scientists familiar with the hazards of the community		X		
Staff experienced with Geographic Information Systems (GIS) or HAZUS	X			County
Staff with education or expertise to assess the community's vulnerability to hazards	X		Fire Dept	County as backup
Transportation Manager / Traffic Engineer		X		

2.2.14.2. PLANNING MECHANISMS

Plans	In Place		Adopted/ Updated	Under Development		Expected Completion
	Y	N		Yes	No	
Comprehensive Plan (Polk 2050)		X			X	
Climate Action Plan/Resiliency Plan		X			X	
Community Wildfire Protection Plan (CWPP)		X			X	
Comprehensive Emergency Management Plan	X					
General Plan	X					
Continuity of Operations Plan (COOP)		X			X	
Disaster Recovery Plan	X					
Economic Development Plan		X			X	
Emergency Operations Plan (EOP)	X					
Environmental Impact Report (EIR)		X			X	
Evacuation Plan		X			X	
Flood Response Plan		X			X	
Floodplain Management Plan/Flood Mitigation Plan		X			X	
Hazard Mitigation Plan		X			X	
Historic Preservation Plan		X			X	
Natural Resource Protection Plan (NRPP)		X			X	
Open Space Management Plan		X			X	
Threat Hazard Identification and Risk Assessment (THIRA)		X			X	

2.2.14.3. REGULATORY TOOLS AND PROGRAMS

Tool or Program	In Place		Adopted/ Updated	Under Development		Expect to Implement
	Y	N		Yes	No	
Building Codes	X					
Citizen Corps - Community Emergency Response Team		X			X	
Community Rating System (CRS Program of the NFIP)		X			X	
Emergency Management Accreditation Program (EMAP)	X					
Fire Code	X					
Firewise Community		X			X	
Floodplain Management/Flood Damage Prevention Ordinance		X			X	
Land Use/Development Planning		X			X	

Tool or Program	In Place		Adopted/ Updated	Under Development		Expect to Implement
	Y	N		Yes	No	
National Flood Insurance Program (NFIP)		X			X	
Post Disaster Redevelopment/Reconstruction Plan/Ordinance		X			X	
Storm Ready		X			X	
Stormwater Management Plan/Ordinance		X			X	
Subdivision Regulations/Ordinance		X			X	
Unified Development Ordinance		X			X	
Zoning Ordinance	X					

2.2.14.4. FISCAL CAPACITY

Fiscal Resource	Never Used	Previously Used	Currently Used	Comments
Capital Improvement Programming	X			
Community Development Block Grants (CDBG)	X			
Development Impact Fees	X			
FEMA Hazard Mitigation Assistance Grants (HMGP, FMA, PDM)	Unsure			
Gas/Electric Utility Fees	X			
General Obligation, Revenue, and/or Special Tax Bonds	X			
Homeland Security Grants (HSGP)	Unsure			
Infrastructure Investment and Jobs Act (IIJA)	X			
Infrastructure State Revolving Fund loan	X			
Partnering Agreements or Intergovernmental Agreements			X	Through the County
Sewer/Water Fees	X			
Special Purpose Taxes (or taxing districts)	X			
Stormwater Utility Fees	X			
USDA Grants	X			
USDA Rural Development Agency Grants	X			
US Economic Development Administration Grants	X			

2.2.14.5. SELF-ASSESSMENT OF CAPABILITY

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability	X		
Administrative and Technical Capability	X		

Area	Degree of Capability		
	Limited	Moderate	High
Fiscal Capability	X		
Available Staff	X		
Political Support/Interest	X		
Community Support	X		

2.2.15. CITY OF URBANDALE

The City of Urbandale is located roughly northwest of the City of Des Moines in south-central Polk County. The City of Urbandale is one of the larger cities in Polk County, and it had an estimated population of 45,580 in 2020. The population of Urbandale grew by 6,117 (15.5%) between 2010 and 2020, and the community is one of several around the Des Moines metropolitan area which experienced double-digit population growth during that decade. The City of Urbandale is governed by a mayor and a 5-member Council.

Specific initiatives/capabilities include:

- The City of Urbandale has numerous programs including fire safety checks, smoke detector replacement and battery replacement, Block Party and child birthday party appearances, Business Safety Inspections and preplan visits, emergency procedure development and planning, fire extinguisher training, Citizen Fire Academy, Kids Fire Academy, Fire Prevention Week Open House, EMS Week Open House, blood pressure checks, First Aid Training, Infant, Child, and Adult CPR & AED Training, car seat checks/installations, fire station tours, Fall & Fire Prevention for Older Adults, school, daycare, and business fire drills and safety presentations, and a Juvenile Fire Intervention Program.
- Urbandale is partnered with Des Moines Water Works to develop a conservation plan for peak usage periods.
- The City has implemented several projects to increase mitigation capabilities including purchase of fire apparatus, constructed a fire training facility, renovated the living quarters of fire station # 42, and constructed an access road for the police department and tornado shelter construction at Walker Johnson Park. Other projects are proposed or underway are: construction of new fire station in the NW area of Urbandale, public works/parks department satellite field maintenance facility, future fire truck replacement, traffic signal preemption, several bridge projects, storm sewer projects and street improvements including interchange projects. The City has twelve outdoor warning sirens. Two of those are shared with Clive and are activated by WestCom dispatch center.
- Urbandale had access to Alert Iowa and uses social media (Facebook, Twitter, LinkedIn) and text messaging alerting.

- The City has completed a tornado safe room at Walker Johnson Park – 8900 Douglas Ave. The intended use of the shelter is for the population of the Walker Johnson Park.
- The City is an active participant in the Community Rating System (CRS) program, and is a class 7 community, maintaining an active floodplain management program and providing flood insurance policyholders within Urbandale with ongoing cost savings.

2.2.15.1. STAFF AND TECHNICAL ASSISTANCE

Staff or Personnel Resource	Yes	No	Department or Single Staff Member	Comments
Emergency Manager	X		Single Staff Member (2)	Chief officers (2)
Engineers or professionals trained in construction practices related to buildings and/or infrastructure	X		Department	City Engineering
Environmental Justice Specialists		X		
Fiscal Management or Procurement Specialists	X		Department	City Finance Department
Floodplain Manager	X		Department	City GIS
Housing Specialist(s)	X		Department	City Community Development
Land Surveyors		X		
Land Use/Management/Development Planning	X		Department	City Community Development
Planners or engineers with an understanding of natural and/or human-caused hazards		X		
Recreation/Green Space Specialist(s)	X		Department	City Parks
Resource Development Staff or Grant-writing		X		
Scientists familiar with the hazards of the community		X		
Staff experienced with Geographic Information Systems (GIS) or HAZUS	X		Department	City GIS
Staff with education or expertise to assess the community's vulnerability to hazards	X		Single Staff Member	Fire Chief
Transportation Manager / Traffic Engineer	X		Department	City Engineering

2.2.15.2. PLANNING MECHANISMS

Plans	In Place		Adopted/ Updated	Under Development		Expected Completion
	Y	N		Yes	No	
Comprehensive Plan (Polk 2050)		X		X		1/2024
Climate Action Plan/Resiliency Plan		X			X	

Plans	In Place		Adopted/ Updated	Under Development		Expected Completion
	Y	N		Yes	No	
Community Wildfire Protection Plan (CWPP)		X			X	
Comprehensive Emergency Management Plan	X		2019			
General Plan		X			X	
Continuity of Operations Plan (COOP)	X		5/2015			
Disaster Recovery Plan		X			X	
Economic Development Plan – **"Urb. Comp. Plan"**	X		12/2023			
Emergency Operations Plan (EOP)	X		2019			
Environmental Impact Report (EIR)		X			X	
Evacuation Plan		X			X	
Flood Response Plan						
Floodplain Management Plan/Flood Mitigation Plan		X			X	
Hazard Mitigation Plan	X		EMA Plan			
Historic Preservation Plan		X			X	
Natural Resource Protection Plan (NRPP)		X			X	
Open Space Management Plan		X			X	
Threat Hazard Identification and Risk Assessment (THIRA)		X			X	

2.2.15.3. REGULATORY TOOLS AND PROGRAMS

Tool or Program	In Place		Adopted/ Updated	Under Development		Expect to Implement
	Y	N		Yes	No	
Building Codes	X		2018			
Citizen Corps - Community Emergency Response Team		X			X	
Community Rating System (CRS Program of the NFIP)	X		2020			
Emergency Management Accreditation Program (EMAP)		X			X	
Fire Code	X		2018			
Firewise Community		X			X	
Floodplain Management/Flood Damage Prevention Ordinance	X		2/2019			
Land Use/Development Planning	X					
National Flood Insurance Program (NFIP)	X		1979 / 2019			
Post Disaster Redevelopment/Reconstruction Plan/Ordinance		X			X	
Storm Ready		X			X	

Tool or Program	In Place		Adopted/ Updated	Under Development		Expect to Implement
	Y	N		Yes	No	
Stormwater Management Plan/Ordinance	X		3/9/2021			
Subdivision Regulations/Ordinance	X		12/2023			
Unified Development Ordinance	X		12/2023			
Zoning Ordinance	X		12/2023			

2.2.15.4. FISCAL CAPACITY

Fiscal Resource	Never Used	Previously Used	Currently Used	Comments
Capital Improvement Programming			X	
Community Development Block Grants (CDBG)			X	
Development Impact Fees			X	
FEMA Hazard Mitigation Assistance Grants (HMGP, FMA, PDM)		X		HMGP – 2018 Floods
Gas/Electric Utility Fees	*Unsure*			
General Obligation, Revenue, and/or Special Tax Bonds			X	
Homeland Security Grants (HSGP)			X	
Infrastructure Investment and Jobs Act (IIJA)	*Unsure*			
Infrastructure State Revolving Fund loan	*Unsure*			
Partnering Agreements or Intergovernmental Agreements			X	
Sewer/Water Fees			X	
Special Purpose Taxes (or taxing districts)			X	
Stormwater Utility Fees			X	
USDA Grants	*Unsure*			
USDA Rural Development Agency Grants	*Unsure*			
US Economic Development Administration Grants	*Unsure*			

2.2.15.5. SELF-ASSESSMENT OF CAPABILITY

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability			X
Administrative and Technical Capability			X
Fiscal Capability			X
Available Staff		X	
Political Support/Interest		X	
Community Support		X	

2.2.16. CITY OF WEST DES MOINES

The City of West Des Moines occupies space roughly in the southwestern portion of Polk County, and the community is the second largest city in Polk County. In 2020 the population of West Des Moines was estimated to be 68,723, and this is an increase of 12,114 over the community's 2010 population of 56,609. The City of West Des Moines is governed by a mayor, city manager, and 5-member Council.

Specific initiatives/capabilities include:

- The City utilizes newsletters, websites, emails, and presentations to educate the public on preparedness topics.
- The City has 14 outdoor warning sirens which are activated by the E911 center or Fire Station Headquarters.
- West Des Moines has cable override, Alert Iowa and e-mails alerting programs in place.

2.2.16.1. STAFF AND TECHNICAL ASSISTANCE

Staff or Personnel Resource	Yes	No	Department or Single Staff Member	Comments
Emergency Manager	X		Single Staff Member	Fire and EMS Chief
Engineers or professionals trained in construction practices related to buildings and/or infrastructure	X		Department	Building Inspection Division; Chief Building Official and 7 Building Inspectors- Fire Marshal and 3 Fire inspectors
Environmental Justice Specialists		X		
Fiscal Management or Procurement Specialists	X		Department	Finance Dept.; Procurement Coordinator
Floodplain Manager	X		Single Staff Member	Chief Building Official
Housing Specialist(s)	X		Single Staff Member (2)	Community and Economic Development; Two Staff Members in the Department: Housing and Community Development Manager and a Housing Planner
Land Surveyors		X		
Land Use/Management/Development Planning	X		Department	Planning Division - 3 planning staff
Planners or engineers with an understanding of natural and/or human-caused hazards	X		Department	Planning Division - 3 planning staff

Staff or Personnel Resource	Yes	No	Department or Single Staff Member	Comments
Recreation/Green Space Specialist(s)	X		Single Staff Member	Park planner/Urban Forestry Supervisor
Resource Development Staff or Grant-writing	X		Single Staff Member	Procurement Coordinator
Scientists familiar with the hazards of the community		X		
Staff experienced with Geographic Information Systems (GIS) or HAZUS	X		Department	Planning Division –2 planning staff
Staff with education or expertise to assess the community's vulnerability to hazards	X		Department	Fire, Engineering, Development services, Public Services
Transportation Manager / Traffic Engineer	X		Department	Engineering Dept

2.2.16.2. PLANNING MECHANISMS

Plans	In Place		Adopted/ Updated	Under Development		Expected Completion
	Y	N		Yes	No	
Comprehensive Plan (Polk 2050)		X		X		UNK
Climate Action Plan/Resiliency Plan	X			X		2024/2025
Community Wildfire Protection Plan (CWPP)		X			X	
Comprehensive Emergency Management Plan	X		2015	X		January 2024
General Plan **(Comprehensive Plan)**	X		Nov. 2022			
Continuity of Operations Plan (COOP)		X			X	
Disaster Recovery Plan		X			X	
Economic Development Plan		X			X	
Emergency Operations Plan (EOP)	X		2015	X		January 2024
Environmental Impact Report (EIR)		X			X	
Evacuation Plan		X			X	
Flood Response Plan	X			X		2024
Floodplain Management Plan/Flood Mitigation Plan	X			X		2024
Hazard Mitigation Plan		X			X	
Historic Preservation Plan		X			X	
Natural Resource Protection Plan (NRPP)		X			X	
Open Space Management Plan **(Allowed uses and Bulk Regulations in Zoning Ordinance; updated multiple times)**	X		June 1996			
Threat Hazard Identification and Risk Assessment (THIRA)		X			X	

2.2.16.3. REGULATORY TOOLS AND PROGRAMS

Tool or Program	In Place		Adopted/ Updated	Under Development		Expect to Implement
	Y	N		Yes	No	
Building Codes **(2021 IBC)**	X		July 2023			
Citizen Corps - Community Emergency Response Team		X			X	
Community Rating System (CRS Program of the NFIP)	X					
Emergency Management Accreditation Program (EMAP)		X			X	
Fire Code **(2021 IFC w/ Amendments)**	X					
Firewise Community		X			X	
Floodplain Management/Flood Damage Prevention Ordinance	X		Jan 2019			
Land Use/Development Planning **(Comprehensive Plan)**	X		Nov 2022			
National Flood Insurance Program (NFIP)	X					
Post Disaster Redevelopment/Reconstruction Plan/Ordinance		X			X	
Storm Ready		X			X	
Stormwater Management Plan/Ordinance	X		2007			
Subdivision Regulations/Ordinance	X		2023	X		2024
Unified Development Ordinance		X			X	
Zoning Ordinance **(updated multiple times since adoption)**	X		June 1996	X		Summer 2024

2.2.16.4. FISCAL CAPACITY

Fiscal Resource	Never Used	Previously Used	Currently Used	Comments
Capital Improvement Programming			X	
Community Development Block Grants (CDBG)		X	X	West Des Moines is an Entitlement City
Development Impact Fees	X			
FEMA Hazard Mitigation Assistance Grants (HMGP, FMA, PDM)		X		
Gas/Electric Utility Fees	X			Cable TV Franchise Fee
General Obligation, Revenue, and/or Special Tax Bonds			X	
Homeland Security Grants (HSGP)		X		
Infrastructure Investment and Jobs Act (IIJA)		X		
Infrastructure State Revolving Fund loan		X	X	
Partnering Agreements or Intergovernmental Agreements			X	
Sewer/Water Fees			X	

Fiscal Resource	Never Used	Previously Used	Currently Used	Comments
Special Purpose Taxes (or taxing districts)			X	
Stormwater Utility Fees			X	
USDA Grants	X			
USDA Rural Development Agency Grants	X			
US Economic Development Administration Grants	X			

2.2.16.5. SELF-ASSESSMENT OF CAPABILITY

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability		X	
Administrative and Technical Capability		X	
Fiscal Capability		X	
Available Staff		X	
Political Support/Interest		X	
Community Support		X	

2.2.17. CITY OF WINDSOR HEIGHTS

The City of Windsor Heights is located in central Polk County and is surrounded by the cities of Urbandale, Clive, West Des Moines, and Des Moines. The estimated population of the City of Windsor Heights was 5,252 in 2020, and the community grew by approximately 8.1% between 2010 and 2020. The community is governed by a Mayor, City Administrator, and 5-member Council.

Specific initiatives/capabilities include:

- The City participates in several training programs to include crime prevention, education outreach, NIXLE, Alert Iowa, environmental education.
- The City has one outdoor warning siren which is activated by the Polk County Dispatch.
- Windsor Height also utilizes Alert Iowa, NIXLE and the city website for alerting and notifications.

2.2.17.1. STAFF AND TECHNICAL ASSISTANCE

Staff or Personnel Resource	Yes	No	Department or Single Staff Member	Comments
Emergency Manager	X		Department	Fire Department
Engineers or professionals trained in construction practices related to buildings and/or infrastructure	X		Department	Third Party – Bolton Menk
Environmental Justice Specialists		X		
Fiscal Management or Procurement Specialists	X		Department	Finance
Floodplain Manager	X		Department	Third Party – Bolton Menk
Housing Specialist(s)	X		Department	Third Party – Bolton Menk
Land Surveyors	X		Department	Third Party – Bolton Menk
Land Use/Management/Development Planning		X		
Planners or engineers with an understanding of natural and/or human-caused hazards	X		Department	Fire Department / Police Department
Recreation/Green Space Specialist(s)		X		
Resource Development Staff or Grant-writing	X		Department	Third Party – Bolton Menk
Scientists familiar with the hazards of the community		X		
Staff experienced with Geographic Information Systems (GIS) or HAZUS	X		Single Staff Member	Individual in Public Works
Staff with education or expertise to assess the community's vulnerability to hazards	X		Department	Fire Department / Police Department

Staff or Personnel Resource	Yes	No	Department or Single Staff Member	Comments
Transportation Manager / Traffic Engineer	X		Department	Third Party – Bolton Menk

2.2.17.2. PLANNING MECHANISMS

Plans	In Place		Adopted/ Updated	Under Development		Expected Completion
	Y	N		Yes	No	
Comprehensive Plan	X		2017		X	
Climate Action Plan/Resiliency Plan	X				X	
Community Wildfire Protection Plan (CWPP)	X				X	
Comprehensive Emergency Management Plan	X			X		Unknown
General Plan	X				X	
Continuity of Operations Plan (COOP)	X				X	
Disaster Recovery Plan	X				X	
Economic Development Plan	X				X	
Emergency Operations Plan (EOP)	X				X	
Environmental Impact Report (EIR)	X				X	
Evacuation Plan	X				X	
Flood Response Plan	X		March 2024			
Floodplain Management Plan/Flood Mitigation Plan	X				X	
Hazard Mitigation Plan	X				X	
Historic Preservation Plan	X				X	
Natural Resource Protection Plan (NRPP)	X				X	
Open Space Management Plan	X				X	
Threat Hazard Identification and Risk Assessment (THIRA)	X				X	

2.2.17.3. REGULATORY TOOLS AND PROGRAMS

Tool or Program	In Place		Adopted/ Updated	Under Development		Expect to Implement
	Y	N		Yes	No	
Building Codes	X					
Citizen Corps - Community Emergency Response Team		X			X	
Community Rating System (CRS Program of the NFIP)		X		X		2025
Emergency Management Accreditation Program (EMAP)		X			X	

Tool or Program	In Place		Adopted/ Updated	Under Development		Expect to Implement
	Y	N		Yes	No	
Fire Code	X					
Firewise Community		X			X	
Floodplain Management/Flood Damage Prevention Ordinance	X					
Land Use/Development Planning	X					
National Flood Insurance Program (NFIP)	X					
Post Disaster Redevelopment/Reconstruction Plan/Ordinance		X			X	
Storm Ready		X			X	
Stormwater Management Plan/Ordinance		X			X	
Subdivision Regulations/Ordinance		X			X	
Unified Development Ordinance		X			X	
Zoning Ordinance	X					

2.2.17.4. FISCAL CAPACITY

Fiscal Resource	Never Used	Previously Used	Currently Used	Comments
Capital Improvement Programming			X	
Community Development Block Grants (CDBG)	X			
Development Impact Fees	X			
FEMA Hazard Mitigation Assistance Grants (HMGP, FMA, PDM)	X			
Gas/Electric Utility Fees			X	
General Obligation, Revenue, and/or Special Tax Bonds	X			
Homeland Security Grants (HSGP)	*Unsure*			
Infrastructure Investment and Jobs Act (IIJA)	X			
Infrastructure State Revolving Fund loan	X			
Partnering Agreements or Intergovernmental Agreements			X	
Sewer/Water Fees			X	
Special Purpose Taxes (or taxing districts)	X			
Stormwater Utility Fees			X	
USDA Grants	X			
USDA Rural Development Agency Grants	X			
US Economic Development Administration Grants	X			

2.2.17.5. SELF-ASSESSMENT OF CAPABILITY

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability		X	
Administrative and Technical Capability		X	
Fiscal Capability		X	
Available Staff	X		
Political Support/Interest			X
Community Support			X

2.2.18. DELAWARE TOWNSHIP

Delaware Township is in central Polk County, northeast of Des Moines. Between the 2010 and 2020 census, its population decreased by 17 people (0.3%) from 6,204 people to 6,187. It is governed by a 3 member trustees board and has a volunteer fire department.

2.2.18.1. STAFF AND TECHNICAL ASSISTANCE

Staff or Personnel Resource	Yes	No	Department or Single Staff Member	Comments
Emergency Manager	X		Department	Polk County EMA
Engineers or professionals trained in construction practices related to buildings and/or infrastructure		X		
Environmental Justice Specialists		X		
Fiscal Management or Procurement Specialists		X		
Floodplain Manager		X		
Housing Specialist(s)		X		
Land Surveyors		X		
Land Use/Management/Development Planning		X		
Planners or engineers with an understanding of natural and/or human-caused hazards		X		
Recreation/Green Space Specialist(s)		X		
Resource Development Staff or Grant-writing		X		
Scientists familiar with the hazards of the community		X		
Staff experienced with Geographic Information Systems (GIS) or HAZUS	X		Department	Polk County Public Works
Staff with education or expertise to assess the community's vulnerability to hazards		X		
Transportation Manager / Traffic Engineer	X		Department	Polk County Public Works

2.2.18.2. PLANNING MECHANISMS

Plans	In Place		Adopted/ Updated	Under Development		Expected Completion
	Y	N		Yes	No	
Comprehensive Plan (Polk 2050)	X					
Climate Action Plan/Resiliency Plan		X		X		
Community Wildfire Protection Plan (CWPP)		X			X	
Comprehensive Emergency Management Plan	X					
General Plan	X					

Plans	In Place		Adopted/ Updated	Under Development		Expected Completion
	Y	N		Yes	No	
Continuity of Operations Plan (COOP)		X			X	
Disaster Recovery Plan		X			X	
Economic Development Plan		X			X	
Emergency Operations Plan (EOP) **(SOGs)**	X					
Environmental Impact Report (EIR)		X			X	
Evacuation Plan		X			X	
Flood Response Plan		X			X	
Floodplain Management Plan/Flood Mitigation Plan		X			X	
Hazard Mitigation Plan **(County Plan)**	X					
Historic Preservation Plan		X			X	
Natural Resource Protection Plan (NRPP)		X			X	
Open Space Management Plan		X			X	
Threat Hazard Identification and Risk Assessment (THIRA) **(County)**	X					

2.2.18.3. REGULATORY TOOLS AND PROGRAMS

Tool or Program	In Place		Adopted/ Updated	Under Development		Expect to Implement
	Y	N		Yes	No	
Building Codes	X					
Citizen Corps - Community Emergency Response Team		X			X	
Community Rating System (CRS Program of the NFIP)		X			X	
Emergency Management Accreditation Program (EMAP)		X			X	
Fire Code	X					
Firewise Community		X			X	
Floodplain Management/Flood Damage Prevention Ordinance		X			X	
Land Use/Development Planning		X			X	
National Flood Insurance Program (NFIP)	X					
Post Disaster Redevelopment/Reconstruction Plan/Ordinance		X			X	
Storm Ready	X					
Stormwater Management Plan/Ordinance		X			X	
Subdivision Regulations/Ordinance		X			X	
Unified Development Ordinance		X			X	
Zoning Ordinance		X			X	

2.2.18.4. FISCAL CAPACITY

Fiscal Resource	Never Used	Previously Used	Currently Used	Comments
Capital Improvement Programming	X			
Community Development Block Grants (CDBG)	X			
Development Impact Fees	X			
FEMA Hazard Mitigation Assistance Grants (HMGP, FMA, PDM)	X			
Gas/Electric Utility Fees	X			
General Obligation, Revenue, and/or Special Tax Bonds			X	
Homeland Security Grants (HSGP)	X			
Infrastructure Investment and Jobs Act (IIJA)	X			
Infrastructure State Revolving Fund loan	X			
Partnering Agreements or Intergovernmental Agreements	X			
Sewer/Water Fees	X			
Special Purpose Taxes (or taxing districts)	X			
Stormwater Utility Fees	X			
USDA Grants	X			
USDA Rural Development Agency Grants	X			
US Economic Development Administration Grants	X			

2.2.18.5. SELF-ASSESSMENT OF CAPABILITY

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability	X		
Administrative and Technical Capability		X	
Fiscal Capability	X		
Available Staff	X		
Political Support/Interest	X		
Community Support	*Not Provided*		

2.2.19. SAYLOR TOWNSHIP

Saylor Township is in central Polk County, north of Des Moines. Between the 2010 and 2020 census, its population decreased by 185 people (-2.9%) from 6,472 to 6,287. The majority of the Township's capabilities noted below are provided through the county.

2.2.19.1. STAFF AND TECHNICAL ASSISTANCE

Staff or Personnel Resource	Yes	No	Department or Single Staff Member	Comments
Emergency Manager	X		Not Provided	Via Polk County
Engineers or professionals trained in construction practices related to buildings and/or infrastructure	X			
Environmental Justice Specialists	X			
Fiscal Management or Procurement Specialists	X			
Floodplain Manager	X			
Housing Specialist(s)	X			
Land Surveyors	X			
Land Use/Management/Development Planning	X			
Planners or engineers with an understanding of natural and/or human-caused hazards	X			
Recreation/Green Space Specialist(s)	X			
Resource Development Staff or Grant-writing	X			
Scientists familiar with the hazards of the community	X			
Staff experienced with Geographic Information Systems (GIS) or HAZUS	X			
Staff with education or expertise to assess the community's vulnerability to hazards	X			
Transportation Manager / Traffic Engineer	X			

2.2.19.2. PLANNING MECHANISMS

Plans	In Place		Adopted/ Updated	Under Development		Expected Completion
	Y	N		Yes	No	
Comprehensive Plan (Polk 2050)	X					
Climate Action Plan/Resiliency Plan	X					
Community Wildfire Protection Plan (CWPP)	X					
Comprehensive Emergency Management Plan	X					
General Plan	X					

Plans	In Place		Adopted/ Updated	Under Development		Expected Completion
	Y	N		Yes	No	
Continuity of Operations Plan (COOP)	X					
Disaster Recovery Plan	X					
Economic Development Plan	X					
Emergency Operations Plan (EOP)	X					
Environmental Impact Report (EIR)	X					
Evacuation Plan	X					
Flood Response Plan	X					
Floodplain Management Plan/Flood Mitigation Plan	X					
Hazard Mitigation Plan	X					
Historic Preservation Plan	X					
Natural Resource Protection Plan (NRPP)	X					
Open Space Management Plan	X					
Threat Hazard Identification and Risk Assessment (THIRA)	X					

2.2.19.3. REGULATORY TOOLS AND PROGRAMS

Tool or Program	In Place		Adopted/ Updated	Under Development		Expect to Implement
	Y	N		Yes	No	
Building Codes	X					
Citizen Corps - Community Emergency Response Team	X					
Community Rating System (CRS Program of the NFIP)	X					
Emergency Management Accreditation Program (EMAP)	X					
Fire Code	X					
Firewise Community	X					
Floodplain Management/Flood Damage Prevention Ordinance	X					
Land Use/Development Planning	X					
National Flood Insurance Program (NFIP)	X					
Post Disaster Redevelopment/Reconstruction Plan/Ordinance	X					
Storm Ready	X					
Stormwater Management Plan/Ordinance	X					
Subdivision Regulations/Ordinance	X					
Unified Development Ordinance	X					
Zoning Ordinance	X					

2.2.19.4. FISCAL CAPACITY

Fiscal Resource	Never Used	Previously Used	Currently Used	Comments
Capital Improvement Programming	X			
Community Development Block Grants (CDBG)	X			
Development Impact Fees	X			
FEMA Hazard Mitigation Assistance Grants (HMGP, FMA, PDM)	X			
Gas/Electric Utility Fees	X			
General Obligation, Revenue, and/or Special Tax Bonds	X			
Homeland Security Grants (HSGP)	X			
Infrastructure Investment and Jobs Act (IIJA)	X			
Infrastructure State Revolving Fund loan	X			
Partnering Agreements or Intergovernmental Agreements	X			
Sewer/Water Fees	X			
Special Purpose Taxes (or taxing districts)	X			
Stormwater Utility Fees	X			
USDA Grants	X			
USDA Rural Development Agency Grants	X			
US Economic Development Administration Grants	X			

2.2.19.5. SELF-ASSESSMENT OF CAPABILITY

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability	X		
Administrative and Technical Capability	X		
Fiscal Capability	X		
Available Staff	X		
Political Support/Interest	X		
Community Support	X		

2.2.20. DES MOINES WATER WORKS

Des Moines Water Works (DMWW) is an independently operated, public utility providing drinking water to approximately 500,000 people in the Greater Des Moines area. DMWW is the largest water utility in Iowa and is among the largest 100 utilities in the country.

In 1919, Des Moines Water Works (DMWW) was formed as a public utility under a new Code of Iowa, Section 388. Under this Code, the water utility is operated by a five-member Board of Trustees, who are appointed by the Mayor of the City of Des Moines and approved by the City Council for a six-year term. The Board of Trustees has all the powers of the City Council to operate the utility except for levying taxes. The utility is owned by the water rate payers. The Board of Trustees hires a General Manager to operate the utility. The General Manager produces an annual budget for the operations of the utility using revenue from the sale of water as the primary income source. This budget is reviewed, modified, and approved by the Board of Trustees. The Board of Trustees is the only body of the utility which can enter into contracts, and the utility must comply with State of Iowa public improvement bidding laws.

Des Moines Water Works is, to some extent, a “non-traditional” plan participant, as they are not a municipal government and don’t have full-time residents. Many of the questions that plan participants were asked in the capability assessment (particularly those related to regulatory authority) are less relevant to a utility organization. However, they were provided with the same complete set of questions as the municipal and county governments so that no potential capabilities were overlooked.

Des Moines Water Works consists of the following departments:

- Customer Service;
- Information Technology;
- Human Resources;
- Water Distribution and Grounds;
- Engineering;
- Finance;
- Office of the CEO / General Manager/ Grounds; and,
- Water Production.

Past or ongoing projects or programs designed to reduce disaster losses include the following:

- Treatment plant levee raised 6 feet;
- Gate closure structure constructed at plant entrance;
- Storm water pumping facility constructed to protect operations center;
- Control Center moved to second floor;
- Second floor added to General Office facility with critical functions moved up;
- Constructed alternate (flood) entrance;
- River intake valve automation;
- Constructed two additional treatment plants (emergency backup & peak capacity);
- Constructed aquifer storage facilities (emergency backup & peak capacity); and,
- Riverbank protection.

Des Moines Water Works has the following mitigation-related capabilities:

- DMWW provides information to its customers on emergency water preparedness and encourages customers to store a three-day supply of water, including at least one gallon of water per person, per day to be prepared for any interruption of water supply that might occur.
- DMWW has a variety of resources available for educators and individuals interested in water supply, pollution prevention, and using water wisely on their website, www.dmww.com .
- DMWW has an on-site warning siren that is activated by the Water Production Control Center Operator based on weather warnings received from the National Weather Service. DMWW has designated tornado shelters in each facility.
- Mutual Aid Agreements in place—DMWW participates in IOWARN.
- Critical Facilities Inventory.
- Engineer on Staff.
- Ability to fund projects through Capital Improvements Funding.
- Fees collected for water services.
- Financial Resources from Impact fees for new development.

- Ability to withhold spending in hazard prone areas.

2.2.20.1. STAFF AND TECHNICAL ASSISTANCE

Staff or Personnel Resource	Yes	No	Department or Single Staff Member	Comments
Emergency Manager		X		
Engineers or professionals trained in construction practices related to buildings and/or infrastructure	X		Single Staff Member	
Environmental Justice Specialists		X		
Fiscal Management or Procurement Specialists	X		Single Staff Member	
Floodplain Manager		X		
Housing Specialist(s)		X		
Land Surveyors		X		
Land Use/Management/Development Planning		X		
Planners or engineers with an understanding of natural and/or human-caused hazards		X		
Recreation/Green Space Specialist(s)		X		
Resource Development Staff or Grant-writing	X		Single Staff Member	
Scientists familiar with the hazards of the community		X		
Staff experienced with Geographic Information Systems (GIS) or HAZUS		X		
Staff with education or expertise to assess the community's vulnerability to hazards		X		
Transportation Manager / Traffic Engineer		X		

2.2.20.2. PLANNING MECHANISMS

Plans	In Place		Adopted/ Updated	Under Development		Expected Completion
	Y	N		Yes	No	
Comprehensive Plan (Polk 2050)		X			X	
Climate Action Plan/Resiliency Plan		X			X	
Community Wildfire Protection Plan (CWPP)		X			X	
Comprehensive Emergency Management Plan		X			X	
General Plan		X			X	
Continuity of Operations Plan (COOP)		X			X	
Disaster Recovery Plan		X			X	
Economic Development Plan		X			X	
Emergency Operations Plan (EOP)	X		2020			

Plans	In Place		Adopted/ Updated	Under Development		Expected Completion
	Y	N		Yes	No	
Environmental Impact Report (EIR)		X			X	
Evacuation Plan		X			X	
Flood Response Plan	X					
Floodplain Management Plan/Flood Mitigation Plan		X			X	
Hazard Mitigation Plan		X			X	
Historic Preservation Plan		X			X	
Natural Resource Protection Plan (NRPP)		X			X	
Open Space Management Plan		X			X	
Threat Hazard Identification and Risk Assessment (THIRA)		X			X	

2.2.20.3. REGULATORY TOOLS AND PROGRAMS

Tool or Program	In Place		Adopted/ Updated	Under Development		Expect to Implement
	Y	N		Yes	No	
Building Codes	X					
Citizen Corps - Community Emergency Response Team		X			X	
Community Rating System (CRS Program of the NFIP)		X			X	
Emergency Management Accreditation Program (EMAP)		X			X	
Fire Code		X			X	
Firewise Community		X			X	
Floodplain Management/Flood Damage Prevention Ordinance		X			X	
Land Use/Development Planning		X			X	
National Flood Insurance Program (NFIP)		X			X	
Post Disaster Redevelopment/Reconstruction Plan/Ordinance		X			X	
Storm Ready		X			X	
Stormwater Management Plan/Ordinance		X			X	
Subdivision Regulations/Ordinance		X			X	
Unified Development Ordinance		X			X	
Zoning Ordinance		X			X	

2.2.20.4. FISCAL CAPACITY

Fiscal Resource	Never Used	Previously Used	Currently Used	Comments
Capital Improvement Programming		X	X	
Community Development Block Grants (CDBG)	X			
Development Impact Fees	X			
FEMA Hazard Mitigation Assistance Grants (HMGP, FMA, PDM)		X		
Gas/Electric Utility Fees	X			
General Obligation, Revenue, and/or Special Tax Bonds	X			
Homeland Security Grants (HSGP)	X			
Infrastructure Investment and Jobs Act (IIJA)	X			
Infrastructure State Revolving Fund loan		X	X	
Partnering Agreements or Intergovernmental Agreements		X		
Sewer/Water Fees		X		
Special Purpose Taxes (or taxing districts)	X			
Stormwater Utility Fees	X			
USDA Grants	X			
USDA Rural Development Agency Grants	X			
US Economic Development Administration Grants	X			

2.2.20.5. SELF-ASSESSMENT OF CAPABILITY

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability	X		
Administrative and Technical Capability	X		
Fiscal Capability	X		
Available Staff	X		
Political Support/Interest	X		
Community Support	X		

2.3. PUBLIC SCHOOL DISTRICT PROFILES AND CAPABILITIES

This section includes general profile information for the eight Polk County school districts who participated in this plan. They are:

- Ankeny 261
- Bondurant-Farrar 720
- Des Moines Independent 1737
- Johnston 3231
- North Polk 4779
- Southeast Polk 6101
- Urbandale 6579
- West Des Moines 6957

There are also two Polk County school districts who were not able to participate in this plan. They are:

- Dallas Center-Grimes Community School District 1576
- Saydel Community School District 5805

Schools are, to some extent, “non-traditional” plan participants, as they are not municipal governments, and don’t have full-time residents. Many of the questions that plan participants were asked in the capability assessment (particularly those related to regulatory authority) are less relevant to the school districts. However, they were provided with the same complete set of questions as the municipal and county governments so that no potential capabilities were overlooked.

The table below provides location and enrollment information for each school district. For school districts that are in multiple counties, these numbers include students that do not reside in Polk County.

Table 8 - Polk County School District Enrollment Data, 2023-2024

District Name	Enrollment
Ankeny 261	12,177

District Name	Enrollment
Bondurant-Farrar 720	2,495
Des Moines Independent 1737	28,018
Johnston 3231	6,381
North Polk 4779	2,059
Southeast Polk 6101	6,748
Urbandale 6579	3,179
West Des Moines 6957	8,037
Total	**69,094**

2.3.1. ANKENY COMMUNITY SCHOOL DISTRICT

2.3.1.1. STAFF AND TECHNICAL ASSISTANCE

Staff or Personnel Resource	Yes	No	Department or Single Staff Member	Comments
Emergency Manager	X		Single Staff Member	Ancillary duty, not dedicated staff
Engineers or professionals trained in construction practices related to buildings and/or infrastructure	X		Single Staff Member	Dedicated staff
Environmental Justice Specialists		X		
Fiscal Management or Procurement Specialists	X		Department	Dedicated staff
Floodplain Manager		X		
Housing Specialist(s)		X		
Land Surveyors		X		
Land Use/Management/Development Planning		X		
Planners or engineers with an understanding of natural and/or human-caused hazards		X		
Recreation/Green Space Specialist(s)		X		
Resource Development Staff or Grant-writing	X		Single Staff Member	Dedicated staff
Scientists familiar with the hazards of the community		X		
Staff experienced with Geographic Information Systems (GIS) or HAZUS		X		
Staff with education or expertise to assess the community's vulnerability to hazards	X		Single Staff Member	Ancillary duty, not dedicated staff
Transportation Manager / Traffic Engineer	X		Department	Contracted, not district employees

2.3.1.2. PLANNING MECHANISMS

Plans	In Place		Adopted/ Updated	Under Development		Expected Completion
	Y	N		Yes	No	
Comprehensive Plan (Polk 2050)		X			X	
Climate Action Plan/Resiliency Plan		X			X	
Community Wildfire Protection Plan (CWPP)		X			X	
Comprehensive Emergency Management Plan	X		9/5/2023			
General Plan		X			X	
Continuity of Operations Plan (COOP)		X			X	

Plans	In Place		Adopted/ Updated	Under Development		Expected Completion
	Y	N		Yes	No	
Disaster Recovery Plan		X			X	
Economic Development Plan		X			X	
Emergency Operations Plan (EOP)	X		9/5/2023			
Environmental Impact Report (EIR)		X			X	
Evacuation Plan	X		9/5/2023			
Flood Response Plan		X			X	
Floodplain Management Plan/Flood Mitigation Plan		X			X	
Hazard Mitigation Plan		X			X	
Historic Preservation Plan		X			X	
Natural Resource Protection Plan (NRPP)		X			X	
Open Space Management Plan		X			X	
Threat Hazard Identification and Risk Assessment (THIRA)				X		5/24/2024

2.3.1.3. REGULATORY TOOLS AND PROGRAMS

Tool or Program	In Place		Adopted/ Updated	Under Development		Expect to Implement
	Y	N		Yes	No	
Building Codes	X		12/20/2021		X	
Citizen Corps - Community Emergency Response Team		X			X	
Community Rating System (CRS Program of the NFIP)		X			X	
Emergency Management Accreditation Program (EMAP)		X			X	
Fire Code	X		12/20/2021		X	
Firewise Community		X			X	
Floodplain Management/Flood Damage Prevention Ordinance		X			X	
Land Use/Development Planning		X			X	
National Flood Insurance Program (NFIP)		X			X	
Post Disaster Redevelopment/Reconstruction Plan/Ordinance		X			X	
Storm Ready		X			X	
Stormwater Management Plan/Ordinance		X			X	
Subdivision Regulations/Ordinance		X			X	
Unified Development Ordinance		X			X	
Zoning Ordinance		X			X	

2.3.1.4. FISCAL CAPACITY

Fiscal Resource	Never Used	Previously Used	Currently Used	Comments
Capital Improvement Programming	X			
Community Development Block Grants (CDBG)	X			
Development Impact Fees	X			
FEMA Hazard Mitigation Assistance Grants (HMGP, FMA, PDM)	X			
Gas/Electric Utility Fees	X			
General Obligation, Revenue, and/or Special Tax Bonds		X		
Homeland Security Grants (HSGP)	X			
Infrastructure Investment and Jobs Act (IIJA)	X			
Infrastructure State Revolving Fund loan	X			
Partnering Agreements or Intergovernmental Agreements	X			
Sewer/Water Fees	X			
Special Purpose Taxes (or taxing districts)	X			
Stormwater Utility Fees	X			
USDA Grants	X			
USDA Rural Development Agency Grants	X			
US Economic Development Administration Grants	X			

2.3.1.5. SELF-ASSESSMENT OF CAPABILITY

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability		X	
Administrative and Technical Capability		X	
Fiscal Capability		X	
Available Staff		X	
Political Support/Interest			X
Community Support			X

2.3.2. BONDURANT-FARRAR COMMUNITY SCHOOL DISTRICT

2.3.2.1. STAFF AND TECHNICAL ASSISTANCE

Staff or Personnel Resource	Yes	No	Department or Single Staff Member	Comments
Emergency Manager		X		
Engineers or professionals trained in construction practices related to buildings and/or infrastructure	X		Department	Third Party Contractor
Environmental Justice Specialists		X		
Fiscal Management or Procurement Specialists	X		Department	Business Office team and Grant Specialist
Floodplain Manager		X		
Housing Specialist(s)		X		
Land Surveyors	X			Third Party Contractor
Land Use/Management/Development Planning	X			Third Party Contractor
Planners or engineers with an understanding of natural and/or human-caused hazards	X			Third Party Contractor
Recreation/Green Space Specialist(s)		X		
Resource Development Staff or Grant-writing	X			
Scientists familiar with the hazards of the community		X		
Staff experienced with Geographic Information Systems (GIS) or HAZUS		X		
Staff with education or expertise to assess the community's vulnerability to hazards		X		
Transportation Manager / Traffic Engineer	X		Single Staff Member	Transportation Manager

2.3.2.2. PLANNING MECHANISMS

Plans	In Place		Adopted/ Updated	Under Development		Expected Completion
	Y	N		Yes	No	
Comprehensive Plan (Polk 2050)		X			X	
Climate Action Plan/Resiliency Plan		X			X	
Community Wildfire Protection Plan (CWPP)		X			X	
Comprehensive Emergency Management Plan	X		2023			
General Plan		X			X	
Continuity of Operations Plan (COOP)		X			X	
Disaster Recovery Plan		X			X	
Economic Development Plan		X			X	

Plans	In Place		Adopted/ Updated	Under Development		Expected Completion
	Y	N		Yes	No	
Emergency Operations Plan (EOP)	X		2023			
Environmental Impact Report (EIR)		X			X	
Evacuation Plan	X		2023 (EOP)			
Flood Response Plan		X			X	
Floodplain Management Plan/Flood Mitigation Plan		X			X	
Hazard Mitigation Plan		X			X	
Historic Preservation Plan		X			X	
Natural Resource Protection Plan (NRPP)		X			X	
Open Space Management Plan		X			X	
Threat Hazard Identification and Risk Assessment (THIRA)	X		2023 (EOP)			

2.3.2.3. REGULATORY TOOLS AND PROGRAMS

Tool or Program	In Place		Adopted/ Updated	Under Development		Expect to Implement
	Y	N		Yes	No	
Building Codes		X			X	
Citizen Corps - Community Emergency Response Team		X			X	
Community Rating System (CRS Program of the NFIP)		X			X	
Emergency Management Accreditation Program (EMAP)		X			X	
Fire Code		X			X	
Firewise Community		X			X	
Floodplain Management/Flood Damage Prevention Ordinance		X			X	
Land Use/Development Planning		X			X	
National Flood Insurance Program (NFIP)		X			X	
Post Disaster Redevelopment/Reconstruction Plan/Ordinance		X			X	
Storm Ready		X			X	
Stormwater Management Plan/Ordinance		X			X	
Subdivision Regulations/Ordinance		X			X	
Unified Development Ordinance		X			X	
Zoning Ordinance		X			X	

2.3.2.4. FISCAL CAPACITY

Fiscal Resource	Never Used	Previously Used	Currently Used	Comments
Capital Improvement Programming			X	
Community Development Block Grants (CDBG)	X			
Development Impact Fees	Unsure			
FEMA Hazard Mitigation Assistance Grants (HMGP, FMA, PDM)		X		
Gas/Electric Utility Fees	Unsure			
General Obligation, Revenue, and/or Special Tax Bonds			X	
Homeland Security Grants (HSGP)	X			
Infrastructure Investment and Jobs Act (IIJA)	X			
Infrastructure State Revolving Fund loan	X			
Partnering Agreements or Intergovernmental Agreements		X	X	
Sewer/Water Fees	Unsure			
Special Purpose Taxes (or taxing districts)			X	
Stormwater Utility Fees	Unsure			
USDA Grants		X		
USDA Rural Development Agency Grants	X			
US Economic Development Administration Grants	X			

2.3.2.5. SELF-ASSESSMENT OF CAPABILITY

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability		X	
Administrative and Technical Capability		X	
Fiscal Capability		X	
Available Staff	X		
Political Support/Interest		X	
Community Support		X	

2.3.3. DES MOINES INDEPENDENT SCHOOL DISTRICT

2.3.3.1. STAFF AND TECHNICAL ASSISTANCE

Staff or Personnel Resource	Yes	No	Department or Single Staff Member	Comments
Emergency Manager	X		Department	
Engineers or professionals trained in construction practices related to buildings and/or infrastructure	X		Department	Third-party Contractor
Environmental Justice Specialists	X		Department	
Fiscal Management or Procurement Specialists	X		Department	
Floodplain Manager		X		
Housing Specialist(s)		X		
Land Surveyors		X		
Land Use/Management/Development Planning		X		
Planners or engineers with an understanding of natural and/or human-caused hazards		X		
Recreation/Green Space Specialist(s)	X		Department	
Resource Development Staff or Grant-writing	X		Department	
Scientists familiar with the hazards of the community		X		
Staff experienced with Geographic Information Systems (GIS) or HAZUS		X		
Staff with education or expertise to assess the community's vulnerability to hazards	X		Department	
Transportation Manager / Traffic Engineer	X		Department	

2.3.3.2. PLANNING MECHANISMS

Plans	In Place		Adopted/ Updated	Under Development		Expected Completion
	Y	N		Yes	No	
Comprehensive Plan (Polk 2050)	X					
Climate Action Plan/Resiliency Plan		X			X	
Community Wildfire Protection Plan (CWPP)		X			X	
Comprehensive Emergency Management Plan	X		2019	X		2025
General Plan	X		2023			
Continuity of Operations Plan (COOP)		X			X	
Disaster Recovery Plan	X					

Plans	In Place		Adopted/ Updated	Under Development		Expected Completion
	Y	N		Yes	No	
Economic Development Plan		X			X	
Emergency Operations Plan (EOP)	X					
Environmental Impact Report (EIR)		X			X	
Evacuation Plan	X					
Flood Response Plan		X			X	
Floodplain Management Plan/Flood Mitigation Plan		X			X	
Hazard Mitigation Plan	X					
Historic Preservation Plan		X			X	
Natural Resource Protection Plan (NRPP)		X			X	
Open Space Management Plan		X			X	
Threat Hazard Identification and Risk Assessment (THIRA)	X					

2.3.3.3. REGULATORY TOOLS AND PROGRAMS

Tool or Program	In Place		Adopted/ Updated	Under Development		Expect to Implement
	Y	N		Yes	No	
Building Codes	Unsure					
Citizen Corps - Community Emergency Response Team	Unsure					
Community Rating System (CRS Program of the NFIP)		X			X	
Emergency Management Accreditation Program (EMAP)	Unsure					
Fire Code	Unsure					
Firewise Community		X			X	
Floodplain Management/Flood Damage Prevention Ordinance		X			X	
Land Use/Development Planning		X			X	
National Flood Insurance Program (NFIP)		X			X	
Post Disaster Redevelopment/Reconstruction Plan/Ordinance		X			X	
Storm Ready	X					
Stormwater Management Plan/Ordinance	Unsure					
Subdivision Regulations/Ordinance		X			X	
Unified Development Ordinance		X			X	
Zoning Ordinance		X			X	

2.3.3.4. FISCAL CAPACITY

Fiscal Resource	Never Used	Previously Used	Currently Used	Comments
Capital Improvement Programming			X	
Community Development Block Grants (CDBG)	X			
Development Impact Fees			X	
FEMA Hazard Mitigation Assistance Grants (HMGP, FMA, PDM)		X		
Gas/Electric Utility Fees			X	
General Obligation, Revenue, and/or Special Tax Bonds			X	
Homeland Security Grants (HSGP)		X		
Infrastructure Investment and Jobs Act (IIJA)	Unsure			
Infrastructure State Revolving Fund loan	Unsure			
Partnering Agreements or Intergovernmental Agreements			X	
Sewer/Water Fees			X	
Special Purpose Taxes (or taxing districts)	X			
Stormwater Utility Fees	X			
USDA Grants	X			
USDA Rural Development Agency Grants	X			
US Economic Development Administration Grants	X			

2.3.3.5. SELF-ASSESSMENT OF CAPABILITY

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability	X		
Administrative and Technical Capability			X
Fiscal Capability			X
Available Staff			X
Political Support/Interest		X	
Community Support			X

2.3.4. JOHNSTON COMMUNITY SCHOOL DISTRICT

2.3.4.1. STAFF AND TECHNICAL ASSISTANCE

Staff or Personnel Resource	Yes	No	Department or Single Staff Member	Comments
Emergency Manager	X		Single Staff Member	
Engineers or professionals trained in construction practices related to buildings and/or infrastructure	X		Single Staff Member	
Environmental Justice Specialists		X		
Fiscal Management or Procurement Specialists		X		
Floodplain Manager		X		
Housing Specialist(s)		X		
Land Surveyors		X		
Land Use/Management/Development Planning		X		
Planners or engineers with an understanding of natural and/or human-caused hazards		X		
Recreation/Green Space Specialist(s)		X		
Resource Development Staff or Grant-writing		X		
Scientists familiar with the hazards of the community		X		
Staff experienced with Geographic Information Systems (GIS) or HAZUS		X		
Staff with education or expertise to assess the community's vulnerability to hazards	X		Single Staff Member	
Transportation Manager / Traffic Engineer	X		Department	

2.3.4.2. PLANNING MECHANISMS

Plans	In Place		Adopted/ Updated	Under Development		Expected Completion
	Y	N		Yes	No	
Comprehensive Plan (Polk 2050)		X			X	
Climate Action Plan/Resiliency Plan		X			X	
Community Wildfire Protection Plan (CWPP)		X			X	
Comprehensive Emergency Management Plan		X			X	
General Plan		X			X	
Continuity of Operations Plan (COOP)		X			X	
Disaster Recovery Plan		X			X	

Plans	In Place		Adopted/ Updated	Under Development		Expected Completion
	Y	N		Yes	No	
Economic Development Plan		X			X	
Emergency Operations Plan (EOP)	X		7/28/2022			
Environmental Impact Report (EIR)		X			X	
Evacuation Plan	X		7/28/2022			
Flood Response Plan		X			X	
Floodplain Management Plan/Flood Mitigation Plan		X			X	
Hazard Mitigation Plan		X			X	
Historic Preservation Plan		X			X	
Natural Resource Protection Plan (NRPP)		X			X	
Open Space Management Plan		X			X	
Threat Hazard Identification and Risk Assessment (THIRA)	X		Nov. 2022			

2.3.4.3. REGULATORY TOOLS AND PROGRAMS

Tool or Program	In Place		Adopted/ Updated	Under Development		Expect to Implement
	Y	N		Yes	No	
Building Codes		X			X	
Citizen Corps - Community Emergency Response Team		X			X	
Community Rating System (CRS Program of the NFIP)		X			X	
Emergency Management Accreditation Program (EMAP)		X			X	
Fire Code		X			X	
Firewise Community		X			X	
Floodplain Management/Flood Damage Prevention Ordinance		X			X	
Land Use/Development Planning		X			X	
National Flood Insurance Program (NFIP)		X			X	
Post Disaster Redevelopment/Reconstruction Plan/Ordinance		X			X	
Storm Ready		X			X	
Stormwater Management Plan/Ordinance		X			X	
Subdivision Regulations/Ordinance		X			X	
Unified Development Ordinance		X			X	
Zoning Ordinance		X			X	

2.3.4.4. FISCAL CAPACITY

Fiscal Resource	Never Used	Previously Used	Currently Used	Comments
Capital Improvement Programming			X	
Community Development Block Grants (CDBG)	X			
Development Impact Fees	X			
FEMA Hazard Mitigation Assistance Grants (HMGP, FMA, PDM)	X			
Gas/Electric Utility Fees	X			
General Obligation, Revenue, and/or Special Tax Bonds		X		
Homeland Security Grants (HSGP)		X		
Infrastructure Investment and Jobs Act (IIJA)	X			
Infrastructure State Revolving Fund loan	X			
Partnering Agreements or Intergovernmental Agreements		X		
Sewer/Water Fees	X			
Special Purpose Taxes (or taxing districts)			X	
Stormwater Utility Fees	X			
USDA Grants		X		
USDA Rural Development Agency Grants	X			
US Economic Development Administration Grants	X			

2.3.4.5. SELF-ASSESSMENT OF CAPABILITY

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability	X		
Administrative and Technical Capability		X	
Fiscal Capability			X
Available Staff	X		
Political Support/Interest	X		
Community Support			X

2.3.5. NORTH POLK COMMUNITY SCHOOL DISTRICT

2.3.5.1. STAFF AND TECHNICAL ASSISTANCE

Staff or Personnel Resource	Yes	No	Department or Single Staff Member	Comments
Emergency Manager		X		
Engineers or professionals trained in construction practices related to buildings and/or infrastructure		X		
Environmental Justice Specialists		X		
Fiscal Management or Procurement Specialists	X		Department	
Floodplain Manager		X		
Housing Specialist(s)		X		
Land Surveyors		X		
Land Use/Management/Development Planning		X		
Planners or engineers with an understanding of natural and/or human-caused hazards		X		
Recreation/Green Space Specialist(s)		X		
Resource Development Staff or Grant-writing		X		
Scientists familiar with the hazards of the community		X		
Staff experienced with Geographic Information Systems (GIS) or HAZUS		X		
Staff with education or expertise to assess the community's vulnerability to hazards		X		
Transportation Manager / Traffic Engineer	X		Single Staff Member	Transportation Director

2.3.5.2. PLANNING MECHANISMS

Plans	In Place		Adopted/ Updated	Under Development		Expected Completion
	Y	N		Yes	No	
Comprehensive Plan (Polk 2050)		X			X	
Climate Action Plan/Resiliency Plan		X			X	
Community Wildfire Protection Plan (CWPP)		X			X	
Comprehensive Emergency Management Plan		X			X	
General Plan		X			X	
Continuity of Operations Plan (COOP)		X			X	
Disaster Recovery Plan		X			X	

Plans	In Place		Adopted/ Updated	Under Development		Expected Completion
	Y	N		Yes	No	
Economic Development Plan		X			X	
Emergency Operations Plan (EOP)	X					
Environmental Impact Report (EIR)		X			X	
Evacuation Plan	X					
Flood Response Plan		X			X	
Floodplain Management Plan/Flood Mitigation Plan		X			X	
Hazard Mitigation Plan		X			X	
Historic Preservation Plan		X			X	
Natural Resource Protection Plan (NRPP)		X			X	
Open Space Management Plan		X			X	
Threat Hazard Identification and Risk Assessment (THIRA)		X			X	

2.3.5.3. REGULATORY TOOLS AND PROGRAMS

Tool or Program	In Place		Adopted/ Updated	Under Development		Expect to Implement
	Y	N		Yes	No	
Building Codes		X			X	
Citizen Corps - Community Emergency Response Team		X			X	
Community Rating System (CRS Program of the NFIP)		X			X	
Emergency Management Accreditation Program (EMAP)		X			X	
Fire Code		X			X	
Firewise Community		X			X	
Floodplain Management/Flood Damage Prevention Ordinance		X			X	
Land Use/Development Planning		X			X	
National Flood Insurance Program (NFIP)		X			X	
Post Disaster Redevelopment/Reconstruction Plan/Ordinance		X			X	
Storm Ready		X			X	
Stormwater Management Plan/Ordinance		X			X	
Subdivision Regulations/Ordinance		X			X	
Unified Development Ordinance		X			X	
Zoning Ordinance		X			X	

2.3.5.4. FISCAL CAPACITY

Fiscal Resource	Never Used	Previously Used	Currently Used	Comments
Capital Improvement Programming		X		
Community Development Block Grants (CDBG)	X			
Development Impact Fees		X		
FEMA Hazard Mitigation Assistance Grants (HMGP, FMA, PDM)		X		
Gas/Electric Utility Fees	X			
General Obligation, Revenue, and/or Special Tax Bonds			X	
Homeland Security Grants (HSGP)			X	
Infrastructure Investment and Jobs Act (IIJA)	X			
Infrastructure State Revolving Fund loan	X			
Partnering Agreements or Intergovernmental Agreements			X	
Sewer/Water Fees	X			
Special Purpose Taxes (or taxing districts)		X		
Stormwater Utility Fees	X			
USDA Grants			X	
USDA Rural Development Agency Grants	X			
US Economic Development Administration Grants	X			

2.3.5.5. SELF-ASSESSMENT OF CAPABILITY

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability		X	
Administrative and Technical Capability	X		
Fiscal Capability	X		
Available Staff	X		
Political Support/Interest		X	
Community Support		X	

2.3.6. SOUTHEAST POLK COMMUNITY SCHOOL DISTRICT

2.3.6.1. STAFF AND TECHNICAL ASSISTANCE

Staff or Personnel Resource	Yes	No	Department or Single Staff Member	Comments
Emergency Manager		X		
Engineers or professionals trained in construction practices related to buildings and/or infrastructure		X		
Environmental Justice Specialists		X		
Fiscal Management or Procurement Specialists	X		Not Provided	
Floodplain Manager		X		
Housing Specialist(s)		X		
Land Surveyors		X		
Land Use/Management/Development Planning		X		
Planners or engineers with an understanding of natural and/or human-caused hazards		X		
Recreation/Green Space Specialist(s)		X		
Resource Development Staff or Grant-writing	X		Not Provided	
Scientists familiar with the hazards of the community		X		
Staff experienced with Geographic Information Systems (GIS) or HAZUS		X		
Staff with education or expertise to assess the community's vulnerability to hazards		X		
Transportation Manager / Traffic Engineer	X		Not Provided	

2.3.6.2. PLANNING MECHANISMS

Plans	In Place		Adopted/ Updated	Under Development		Expected Completion
	Y	N		Yes	No	
Comprehensive Plan (Polk 2050)		X			X	
Climate Action Plan/Resiliency Plan		X			X	
Community Wildfire Protection Plan (CWPP)		X			X	
Comprehensive Emergency Management Plan		X			X	
General Plan		X			X	
Continuity of Operations Plan (COOP)		X			X	
Disaster Recovery Plan		X			X	

Plans	In Place		Adopted/ Updated	Under Development		Expected Completion
	Y	N		Yes	No	
Economic Development Plan		X			X	
Emergency Operations Plan (EOP)	X					
Environmental Impact Report (EIR)		X			X	
Evacuation Plan	X					
Flood Response Plan		X			X	
Floodplain Management Plan/Flood Mitigation Plan		X			X	
Hazard Mitigation Plan		X			X	
Historic Preservation Plan		X			X	
Natural Resource Protection Plan (NRPP)		X			X	
Open Space Management Plan		X			X	
Threat Hazard Identification and Risk Assessment (THIRA)		X			X	

2.3.6.3. REGULATORY TOOLS AND PROGRAMS

Tool or Program	In Place		Adopted/ Updated	Under Development		Expect to Implement
	Y	N		Yes	No	
Building Codes	X					
Citizen Corps - Community Emergency Response Team		X			X	
Community Rating System (CRS Program of the NFIP)		X			X	
Emergency Management Accreditation Program (EMAP)		X			X	
Fire Code	X					
Firewise Community		X			X	
Floodplain Management/Flood Damage Prevention Ordinance		X			X	
Land Use/Development Planning	X					
National Flood Insurance Program (NFIP)		X			X	
Post Disaster Redevelopment/Reconstruction Plan/Ordinance		X			X	
Storm Ready		X			X	
Stormwater Management Plan/Ordinance		X			X	
Subdivision Regulations/Ordinance		X			X	
Unified Development Ordinance		X			X	

Tool or Program	In Place		Adopted/ Updated	Under Development		Expect to Implement
	Y	N		Yes	No	
Zoning Ordinance		X			X	

2.3.6.4. FISCAL CAPACITY

Fiscal Resource	Never Used	Previously Used	Currently Used	Comments
Capital Improvement Programming	X			
Community Development Block Grants (CDBG)	X			
Development Impact Fees	X			
FEMA Hazard Mitigation Assistance Grants (HMGP, FMA, PDM)		X		
Gas/Electric Utility Fees	X			
General Obligation, Revenue, and/or Special Tax Bonds			X	
Homeland Security Grants (HSGP)			X	
Infrastructure Investment and Jobs Act (IIJA)	X			
Infrastructure State Revolving Fund loan	X			
Partnering Agreements or Intergovernmental Agreements	X			
Sewer/Water Fees	X			
Special Purpose Taxes (or taxing districts)		X		
Stormwater Utility Fees	X			
USDA Grants		X		
USDA Rural Development Agency Grants	X			
US Economic Development Administration Grants	X			

2.3.6.5. SELF-ASSESSMENT OF CAPABILITY

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability		X	
Administrative and Technical Capability		X	
Fiscal Capability		X	
Available Staff		X	
Political Support/Interest		X	
Community Support		X	

2.3.7. URBANDALE COMMUNITY SCHOOL DISTRICT

2.3.7.1. STAFF AND TECHNICAL ASSISTANCE

Staff or Personnel Resource	Yes	No	Department or Single Staff Member	Comments
Emergency Manager		X		
Engineers or professionals trained in construction practices related to buildings and/or infrastructure		X		
Environmental Justice Specialists		X		
Fiscal Management or Procurement Specialists		X		
Floodplain Manager		X		
Housing Specialist(s)		X		
Land Surveyors		X		
Land Use/Management/Development Planning		X		
Planners or engineers with an understanding of natural and/or human-caused hazards		X		
Recreation/Green Space Specialist(s)		X		
Resource Development Staff or Grant-writing		X		
Scientists familiar with the hazards of the community		X		
Staff experienced with Geographic Information Systems (GIS) or HAZUS		X		
Staff with education or expertise to assess the community's vulnerability to hazards		X		
Transportation Manager / Traffic Engineer		X		

2.3.7.2. PLANNING MECHANISMS

Plans	In Place		Adopted/ Updated	Under Development		Expected Completion
	Y	N		Yes	No	
Comprehensive Plan (Polk 2050)		X			X	
Climate Action Plan/Resiliency Plan		X			X	
Community Wildfire Protection Plan (CWPP)		X			X	
Comprehensive Emergency Management Plan		X			X	
General Plan		X			X	
Continuity of Operations Plan (COOP)		X			X	

Plans	In Place		Adopted/ Updated	Under Development		Expected Completion
	Y	N		Yes	No	
Disaster Recovery Plan		X			X	
Economic Development Plan		X			X	
Emergency Operations Plan (EOP)	X					
Environmental Impact Report (EIR)		X			X	
Evacuation Plan	X					
Flood Response Plan		X			X	
Floodplain Management Plan/Flood Mitigation Plan		X			X	
Hazard Mitigation Plan		X			X	
Historic Preservation Plan		X			X	
Natural Resource Protection Plan (NRPP)		X			X	
Open Space Management Plan		X			X	
Threat Hazard Identification and Risk Assessment (THIRA)		X			X	

2.3.7.3. REGULATORY TOOLS AND PROGRAMS

Tool or Program	In Place		Adopted/ Updated	Under Development		Expect to Implement
	Y	N		Yes	No	
Building Codes		X			X	
Citizen Corps - Community Emergency Response Team		X			X	
Community Rating System (CRS Program of the NFIP)		X			X	
Emergency Management Accreditation Program (EMAP)		X			X	
Fire Code	X					
Firewise Community		X			X	
Floodplain Management/Flood Damage Prevention Ordinance		X			X	
Land Use/Development Planning		X			X	
National Flood Insurance Program (NFIP)		X			X	
Post Disaster Redevelopment/Reconstruction Plan/Ordinance		X			X	
Storm Ready		X			X	
Stormwater Management Plan/Ordinance	X					

Tool or Program	In Place		Adopted/ Updated	Under Development		Expect to Implement
	Y	N		Yes	No	
Subdivision Regulations/Ordinance		X			X	
Unified Development Ordinance		X			X	
Zoning Ordinance	X					

2.3.7.4. FISCAL CAPACITY

Fiscal Resource	Never Used	Previously Used	Currently Used	Comments
Capital Improvement Programming			X	10 Year Capital Plan
Community Development Block Grants (CDBG)	X			
Development Impact Fees	X			
FEMA Hazard Mitigation Assistance Grants (HMGP, FMA, PDM)	X			
Gas/Electric Utility Fees	X			
General Obligation, Revenue, and/or Special Tax Bonds			X	New Buildings
Homeland Security Grants (HSGP)	X			
Infrastructure Investment and Jobs Act (IIJA)	X			
Infrastructure State Revolving Fund loan	X			
Partnering Agreements or Intergovernmental Agreements			X	28E Agreements
Sewer/Water Fees	X			
Special Purpose Taxes (or taxing districts)	X			
Stormwater Utility Fees	X			
USDA Grants	X			
USDA Rural Development Agency Grants	X			
US Economic Development Administration Grants	X			

2.3.7.5. SELF-ASSESSMENT OF CAPABILITY

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability		X	
Administrative and Technical Capability		X	
Fiscal Capability		X	
Available Staff		X	

Area	Degree of Capability		
	Limited	Moderate	High
Political Support/Interest	X		
Community Support		X	

2.3.8. WEST DES MOINES COMMUNITY SCHOOL DISTRICT

2.3.8.1. STAFF AND TECHNICAL ASSISTANCE

Staff or Personnel Resource	Yes	No	Department or Single Staff Member	Comments
Emergency Manager	X		Single Staff	Security Specialist
Engineers or professionals trained in construction practices related to buildings and/or infrastructure	X			Third Party Contractor
Environmental Justice Specialists	Unknown			
Fiscal Management or Procurement Specialists	X		Department	
Floodplain Manager	Unknown			
Housing Specialist(s)	Unknown			
Land Surveyors	X			Third Party Contractor
Land Use/Management/Development Planning	X			Third Party Contractor
Planners or engineers with an understanding of natural and/or human-caused hazards	X			Third Party Contractor
Recreation/Green Space Specialist(s)	Unknown			
Resource Development Staff or Grant-writing	Unknown			
Scientists familiar with the hazards of the community	Unknown			
Staff experienced with Geographic Information Systems (GIS) or HAZUS	Unknown			
Staff with education or expertise to assess the community's vulnerability to hazards	Unknown			
Transportation Manager / Traffic Engineer	X		Single Staff	

2.3.8.2. PLANNING MECHANISMS

Plans	In Place		Adopted/ Updated	Under Development		Expected Completion
	Y	N		Yes	No	
Comprehensive Plan (Polk 2050)		X			X	
Climate Action Plan/Resiliency Plan		X			X	
Community Wildfire Protection Plan (CWPP)		X			X	
Comprehensive Emergency Management Plan	X			X		Late 2025
General Plan	X					
Continuity of Operations Plan (COOP)	X					

Plans	In Place		Adopted/ Updated	Under Development		Expected Completion
	Y	N		Yes	No	
Disaster Recovery Plan		X			X	
Economic Development Plan	Unknown					
Emergency Operations Plan (EOP)	X					
Environmental Impact Report (EIR)		X			X	
Evacuation Plan	X					
Flood Response Plan	Unknown					
Floodplain Management Plan/Flood Mitigation Plan		X			X	
Hazard Mitigation Plan		X			X	
Historic Preservation Plan		X			X	
Natural Resource Protection Plan (NRPP)		X			X	
Open Space Management Plan		X			X	
Threat Hazard Identification and Risk Assessment (THIRA)	X			X		Vulnerability Assessments – Late 2025

2.3.8.3. REGULATORY TOOLS AND PROGRAMS

Tool or Program	In Place		Adopted/ Updated	Under Development		Expect to Implement
	Y	N		Yes	No	
Building Codes	X					
Citizen Corps - Community Emergency Response Team	Unknown					
Community Rating System (CRS Program of the NFIP)	Unknown					
Emergency Management Accreditation Program (EMAP)	Unknown					
Fire Code	X					
Firewise Community	Unknown					
Floodplain Management/Flood Damage Prevention Ordinance	Unknown					
Land Use/Development Planning	Unknown					
National Flood Insurance Program (NFIP)	Unknown					
Post Disaster Redevelopment/Reconstruction Plan/Ordinance	Unknown					
Storm Ready	Unknown					

Tool or Program	In Place		Adopted/ Updated	Under Development		Expect to Implement
	Y	N		Yes	No	
Stormwater Management Plan/Ordinance	Unknown					
Subdivision Regulations/Ordinance	Unknown					
Unified Development Ordinance	Unknown					
Zoning Ordinance	Unknown					

2.3.8.4. FISCAL CAPACITY

Fiscal Resource	Never Used	Previously Used	Currently Used	Comments
Capital Improvement Programming	X			Not Applicable
Community Development Block Grants (CDBG)	X			Not Applicable
Development Impact Fees	X			Not Applicable
FEMA Hazard Mitigation Assistance Grants (HMGP, FMA, PDM)		X		
Gas/Electric Utility Fees	X			Not Applicable
General Obligation, Revenue, and/or Special Tax Bonds			X	
Homeland Security Grants (HSGP)			X	
Infrastructure Investment and Jobs Act (IIJA)	X			Not Applicable
Infrastructure State Revolving Fund loan	X			Not Applicable
Partnering Agreements or Intergovernmental Agreements			X	
Sewer/Water Fees	X			Not Applicable
Special Purpose Taxes (or taxing districts)	X			Not Applicable
Stormwater Utility Fees	X		4	Not Applicable
USDA Grants	X			Not Applicable
USDA Rural Development Agency Grants	X			Not Applicable
US Economic Development Administration Grants	X			Not Applicable

2.3.8.5. SELF-ASSESSMENT OF CAPABILITY

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability			X
Administrative and Technical Capability			X
Fiscal Capability			X

Area	Degree of Capability		
	Limited	Moderate	High
Available Staff		X	
Political Support/Interest		X	
Community Support			X

2.4. NFIP PARTICIPATION AND COMPLIANCE

The National Flood Insurance Program (NFIP) provides flood insurance to property owners, renters, and businesses in flood prone areas across the country. NFIP participating communities agree to adopt, implement, and enforce local flood plain regulations to protect lives and reduce the risk from future flooding. Participation in the NFIP is voluntary; the following communities in Polk County currently do not participate in the NFIP:

- Alleman
- Delaware Township
- Saylor Township

The City of Alleman expects to adopt its flood plan in Summer 2024, and local officials anticipate that the community will begin participating in the NFIP shortly after the adoption of the flood plan. Delaware Township and Saylor Township have not expressed an expectation that either community will participate in the NFIP in the near future, mainly due to funding, logistical, and administrative constraints. The following plan participants are not municipal governments and do not have residents, and thus are ineligible to participate in the NFIP:

- Des Moines Water Works
- Ankeny School District 261
- Bondurant-Farrar School District 720
- Des Moines Independent School District 1737
- Johnston School District 3231
- North Polk School District 4779
- Southeast Polk School District 6101
- Urbandale School District 6579
- West Des Moines School District 6957

The table below addresses participating jurisdictions continued compliance with NFIP requirements:

Table 9- NFIP Participation and Compliance

Jurisdiction	Has your community adopted a floodplain management ordinance that meets NFIP Minimum criteria?	Has your community adopted the latest effective Flood Insurance Rate Map (FIRM)?	Do you regulate/ permit development in the Special Flood Hazard Area (SFHA)?	Which position or agency is in charge of NFIP compliance for your community?	How do you implement the substantial improvement / substantial damage provisions of your floodplain management ordinance?
Unincorporated Polk County	Yes	Yes	Yes	Polk County Public Works – Planning and Development	Yes; via building permit process
Altoona	Yes	Yes	Yes	City Engineer	Yes; via building permit process
Ankeny	Yes	Yes	Yes	Senior Planner, Community Development Department	N/A; no projects have met requirement in planning period
Bondurant	Yes; adopted 1/7/19	Yes	Yes	City Administrator	Yes; regulated via ordinance 190107-200
Clive	Yes; adopted 2021	Yes; adopted 2019	Yes	Community Development Department	Yes; Review of Floodplain Development Permit application prior to issuance of any building permit request in SFHA
Des Moines	Yes	Yes	Yes	Civil Engineer with Permit & Development Division of Engineering Department	Yes; via chapter 50 of city's municipal code
Elkhart	No	No	No	Not Specified	Not Specified

Jurisdiction	Has your community adopted a floodplain management ordinance that meets NFIP Minimum criteria?	Has your community adopted the latest effective Flood Insurance Rate Map (FIRM)?	Do you regulate/ permit development in the Special Flood Hazard Area (SFHA)?	Which position or agency is in charge of NFIP compliance for your community?	How do you implement the substantial improvement / substantial damage provisions of your floodplain management ordinance?
Grimes	Yes	Yes	Yes	Development Services Director	Yes; projects evaluated relative to estimated market valuation at time of permit
Johnston	Yes	Yes	Yes	Community Development Director	Yes; projects evaluated relative to estimated market valuation at time of permit
Mitchellville	Yes	Yes	Yes	Zoning Administrator	Yes; via building permit process
Pleasant Hill	Yes	Yes	Yes	Senior Building Inspector	Via Chapter 160 of the City's Municipal code and building permit process
Polk City	Yes	Yes	Yes	City Manager	Yes; via building permit process
Runnells	Yes	Yes	Yes	City Clerk	Yes; via section 156.05 of the municipal code
Urbandale	Yes	Yes	Yes	City Engineer	Yes; via a dedicated Floodplain Development Permit process
West Des Moines	Yes	Yes	Yes	Floodplain Administrator	Yes; outlined in city ordinance
Windsor Heights	Yes	Yes	Yes	Floodplain Administrator	Yes; via section 185.07 of the municipal code

Chapter 3:

Risk Asssessment



3. HAZARD IDENTIFICATION AND RISK ASSESSMENT (HIRA)

44 CFR Requirement §201.6(c)(2): [The plan shall include] A risk assessment that provides the factual basis for activities proposed in the strategy to reduce losses from identified hazards. Local risk assessments must provide sufficient information to enable the jurisdiction to identify and prioritize appropriate mitigation actions to reduce losses from identified hazards

The risk assessment process identifies and profiles relevant hazards and assesses the exposure of lives, property, and infrastructure within Polk County, Iowa to these hazards. The goal of the risk assessment is to estimate the potential loss in the planning area, including loss of life, personal injury, property damage, and economic loss, from a hazard event. The risk assessment process allows communities in the planning area to better understand their potential risk to the identified hazards and provides a framework for developing and prioritizing mitigation actions to reduce risk from future hazard events.

The risk assessment for Polk County and participating jurisdictions followed the methodology described in the FEMA publication 386-2, *Understanding Your Risks: Identifying Hazards and Estimating Losses* (2002), which includes a four-step process:

- Step 1—Identify Hazards
- Step 2—Profile Hazard Events
- Step 3—Inventory Assets
- Step 4—Estimate Losses

3.1 HAZARD IDENTIFICATION

The 22 hazards identified for this plan update are listed below in alphabetical order.

- Animal/Crop/Plant Disease
- Climate Change
- Cyberattacks
- Dam Failure
- Drought

- Earthquake
- Expansive Soils
- Extreme Temperature
- Flash Flooding
- Grass or Wildland Fire
- Hazardous Materials
- Human Disease
- Infrastructure Failure
- Levee Failure
- River Flooding
- Sinkholes/Landslide
- Structural Fire
- Thunderstorm with lightning/hail
- Tornado
- Transportation Incident
- Windstorm
- Winter Storm

3.1.1 REVIEW OF EXISTING MITIGATION PLANS

Prior to 2009, Hazard Mitigation Planning in Polk County was accomplished on a jurisdictional basis. In 2009, the unincorporated county and incorporated municipalities came together to coordinate mitigation planning for the entire Polk County planning area. This coordinated effort resulted in the Polk County Multi-jurisdictional Hazard Mitigation Plan, approved by FEMA on July 9, 2009 (hereafter referred to as the 2009 Polk County Hazard Mitigation Plan). In 2014, the first update of the Polk County Multi-Jurisdictional Hazard Mitigation Plan was completed, approved, and adopted as was the subsequent update in 2019.

After a review of the hazards, it was agreed that the hazards/hazard naming for this update will be consistent with the 2023 Iowa State Hazard Mitigation Plan with the following exceptions:

- Climate change will be added as a hazard to be profiled
- Cyberattacks will be added as a hazard to be profiled
- Extreme Heat is now Extreme Temperature
- Flooding Hazard will be separated into separate sections: Flash Flooding and Flooding

- Sinkholes and landslides will be combined into one hazard
- Structural Fire will be profiled separate from Infrastructure Failure
- Dam and Levee failure will be combined into one hazard
- Terrorism will not be included as a profiled hazard
- Radiological Incident will not be included as a profiled hazard

The rational for the hazards not including in this 2024 plan update is provided below:

Terrorism: Polk County utilizes other planning mechanisms to perform risk assessment for terrorism in the planning area. In addition, since the Hazard Mitigation Plan has a strong emphasis on public participation, it was determined that discussion of vulnerabilities to terrorism should not be included in this public document.

Radiological Incident: Polk County is not within the Emergency Planning Zone of any nuclear power plant facilities. Therefore, it was determined that Radiological Incident would not be analyzed as a separate hazard. However, transportation incidents involving radioactive materials can occur within the planning area. The Transportation Incident Hazard will include assessment of this component of radiological incidents.

3.1.2 DISASTER DECLARATION HISTORY

Information utilized to identify hazards relevant for Polk County was obtained by examining events that triggered federal disaster declarations. Federal and/or state declarations may be granted when the severity and magnitude of an event surpasses the ability of the local government to respond and recover. Disaster assistance is supplemental and sequential. When the local government's capacity has been surpassed, a state disaster declaration may be issued, allowing for the provision of state assistance. If the disaster is so severe that both the local and state governments' capacities are exceeded; a federal emergency or disaster declaration may be issued allowing for the provision of federal assistance.

FEMA also issues emergency declarations, which are more limited in scope and do not include the long-term federal recovery programs of major disaster declarations. Determinations for declaration type are based on scale and type of damages and institutions or industrial sectors affected. The table below provides additional information on federal disaster declarations which applied to Polk County from 1953 to 2024.

Table 10 - FEMA Disaster Declarations that included Polk County, Iowa, 1953-2024

Disaster Number	Description	Declaration Date & Incident Period	Individual Assistance (IA) Public Assistance (PA)
DR-4784	Severe storms	05-24-2024 05-20-2024 – 05-21-2024	IA

Disaster Number	Description	Declaration Date & Incident Period	Individual Assistance (IA) Public Assistance (PA)
DR-4779	Tornado	05-14-2024 04-26-2024 – 04-27-2024	IA
DR-4557	Severe storms	08-17-2020 08-10-2020	IA & PA
DR-4483	COVID-19	03-23-2020 03-17-2020 – 05-11-2023	IA & PA
EM-3480	COVID-19	03-13-2020 01-20-2020 – 05-11-2023	N/A
DR-4421	Severe storms, Flooding	03-23-2019 03-12-2019 – continuing	IA & PA
DR-4386	Severe Storms, Tornadoes, Straight Line Winds, & Flooding	8-20-2018 6-6-2018 to 7-2-2018	PA
DR-1930	Severe Storms, Flooding, & Tornadoes	7-29-2010 6-1-2010 to 8-31-2010	IA & PA
DR-1763	Severe Storms, Tornadoes, & Flooding	5-27-2008 5-25-2008 to 8-13-2008	IA & PA
DR-1688	Severe Winter Storms	3-14-2007 2-23-2007 to 3-2-2007	PA
DR-1518	Severe Storms, Tornadoes, & Flooding	5-25-2004 5-19-2004 to 6-24-2004	IA
DR-1230	Severe Weather, Tornadoes, & Flooding	7-2-1998 6-13-1998 to 7-15-1998	IA & PA
DR-1191	Severe Snow Storm	11-20-1997 10-26-97 to 10-28-1997	PA
DR-996	Flooding, Severe Storm	7-9-1993 4-13-1993 to 10-1-1993	IA & PA
DR-868	Flooding, Severe Storm	5-26-1990 5-18-1990 to 7-6-1990	IA & PA
DR-443	Flooding, Severe Storm	6-24-1974 / 6-24-1974	IA & PA
DR-269	Heavy Rains, Flooding	8-14-69 / 8-14-69	IA & PA
DR-259	Flooding	4-25-1969 4-25-1969 to 4-25-1969	IA & PA
DR-193	Flooding	4-22-1965 4-22-1965 to 4-22-1965	IA & PA

Source: Federal Emergency Management Agency, www.fema.gov/

In addition to FEMA Disaster Declarations, aid can also be made available through disaster proclamations from the Governor of the State of Iowa. The following table details the five State disaster proclamations covering Polk County since the County's previous plan (2018).

Table 11. Iowa State Disaster Proclamations Since 2018

Disaster Proclamation Date	Hazard Description
04/29/2024	Severe weather, including damaging winds, straight-line winds, tornadoes, heavy rains, thunderstorms, and flash flooding, resulted in significant damage to public and private property, power outages, and large debris piles.
03/07/2022	A storm system caused severe weather, including damaging winds, heavy rains, thunderstorms, and tornadoes, resulted in death, personal injury, significant damage to public and private property, and power outages.
09/15/2020	The World Health Organization reported an outbreak of Novel Coronavirus 2019 (COVID-19) in multiple countries, causing illness and death, and the United States Department of Health Services declared a national public health emergency.
09/09/2020	A storm system caused severe weather, including damaging winds, straight-line winds, heavy rains, thunderstorms, and flash flooding, resulting in significant damage to public and private property, power outages, large debris piles, and damage to emergency communications systems.
08/11/2020	A storm system caused severe weather, including damaging winds, straight-line winds, heavy rains, thunderstorms, and flash flooding, resulting in significant damage to public and private property, power outages, large debris piles, and damage to emergency communications systems.

3.1.3 RESEARCH AND ADDITIONAL SOURCES

Additional data on locations and past impacts of hazards in the planning area was collected from the following sources:

- Iowa Hazard Mitigation Plan (September 2023);
- Polk County Multi-Jurisdictional Hazard Mitigation Plan (2018);

- Polk County Multi-Jurisdicational Hazard Mitigation Plan (July 2014);
- Federal Emergency Management Agency (FEMA);
- Iowa Department of Natural Resources;
- National Drought Mitigation Center Drought Reporter;
- US Department of Agriculture's (USDA) Risk Management Agency Crop Insurance Statistics;
- Data Collection Guides completed by each jurisdiction;
- Des Moines Area Regional GIS Partnership;
- Environmental Protection Agency;
- Flood Insurance Administration;
- Goods Movement in the Des Moines Metropolitan Area, 2002;
- Iowa Department of Agriculture and Land Stewardship, Division of Soil Conservation;
- Iowa Department of Education, Bureau of Information and Analysis Services;
- Iowa Department of Public Safety;
- Iowa Department of Transportation, Office of Traffic and Safety;
- Iowa Flood Center;
- Iowa State Fire Marshal Division;
- Iowa Utilities Board;
- National Fire Incident Reporting System (NFIRS);
- National Oceanic and Atmospheric Administration's (NOAA) National Climatic Data Center;
- National Oceanic and Atmospheric Administration's (NOAA) National Weather Service, Des Moines Weather Forecast Office;
- Pipeline and Hazardous Materials Safety Administration;
- Polk County Comprehensive Plan;
- Polk County Emergency Management;
- Polk County Preliminary Digital Flood Insurance Rate Map, FEMA;
- Polk County Preliminary Flood Insurance Study, FEMA;
- SILVIS Lab, Department of Forest Ecology and Management, University of Wisconsin;
- The Tomorrow Plan: Partnering for a Greater, Greener Des Moines, July 2013 Draft;

- U.S. Army Corps of Engineers;
- U.S. Department of Transportation;
- United States Geological Survey; and,
- Various online articles and publications (sources are indicated where data is cited).
- North Raccoon Watershed Management Plan 2020
- City of Clive Mitigation Benefits Estimator Study 2017 – 2021
- City of Ankeny Stormwater Management Plan 2017- 2020
- Walnut Creek Watershed Management Plan, June 2016
- Mud, Camp, and Spring Creek Watershed Management Plan, April 2016
- Fourmile Creek Watershed Management Plan, April 2015
- Fourmile Creek Watershed Study, December 2013
- 2010 West Des Moines Watershed Assessment
- 2009 City of Johnston Watershed Assessment, Stormwater Management and Action Plan
- Flood Protection Study: Grand Avenue to Jordan Creek, 2008
- Fairmeadows Creek Study, 1997
- Grand Avenue River Bottom Area Stormwater Drainage Study, 1989
- Jordan Creek Floodplain Study, 1980
- Jordan Creek Unsteady Flow Analysis, April 1996
- Jordan Creek Watershed Stormwater Master Plan, 1992
- West Des Moines Storm Drainage Study 1975

3.1.4 HAZARDS IDENTIFIED

Through the hazard identification review process, 22 natural and human-caused/technological hazards that have the potential to significantly affect the planning area were chosen for further analysis in the risk assessment. The hazards identified for this plan update are listed below in alphabetical order

- Animal/Crop/Plant Disease
- Climate Change
- Cyberattacks
- Dam Failure
- Drought

- Earthquake
- Expansive Soils
- Extreme Temperature
- Flash Flooding
- Grass or Wildland Fire
- Hazardous Materials
- Human Disease
- Infrastructure Failure
- Levee Failure
- River Flooding
- Sinkholes/Landslide
- Structural Fire
- Thunderstorm with lightning/hail
- Tornado
- Transportation Incident
- Windstorm
- Winter Storm

Although 22 hazards with the potential to significantly affect the planning area were identified and selected for additional analysis, not all hazards impact every jurisdiction. The hazards which pose an acute risk to specific jurisdictions are dam failure and levee failure. The particular impacts of the other 20 hazards profiled may vary slightly depending on the characteristics of the affected jurisdiction(s), but the overall vulnerability of Polk County jurisdictions to these hazards is considered to be equal. Table 12 provides a summary of the jurisdictions impacted by each hazard. An “x” indicates the jurisdiction is impacted by the hazard. A "-" indicates the hazard is not applicable to that jurisdiction.

Table 12 - Hazards Identified for Each Jurisdiction

Jurisdiction	Animal/Plant/Crop Disease	Climate Change	Cyberattacks	Dam Failure	Drought	Earthquake	Expansive Soils	Extreme Temperature	Flash Flooding	Grass/Wildland Fire	HAZMAT incident	Human Disease	Infrastructure Failure	Levee Failure	River Flooding	Sinkholes/Landslide	Structural Fire	Thunderstorm/Lightning/Hail	Tornado	Transportation Incident	Windstorm	Winter Storm
Polk County	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
City of Alleman	X	X	X	-	X	X	X	X	X	X	X	X	X	-	X	X	X	X	X	X	X	X
City of Altoona	X	X	X	-	X	X	X	X	X	X	X	X	X	-	X	X	X	X	X	X	X	X
City of Ankeny	X	X	X	-	X	X	X	X	X	X	X	X	X	-	X	X	X	X	X	X	X	X
City of Bondurant	X	X	X	-	X	X	X	X	X	X	X	X	X	-	X	X	X	X	X	X	X	X
City of Clive	X	X	X	X	X	X	X	X	X	X	X	X	X	-	X	X	X	X	X	X	X	X
Deleware Township	X	X	X	X	X	X	X	X	X	X	X	X	X	-	X	X	X	X	X	X	X	X
City of Des Moines	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
City of Elkhart	X	X	X	-	X	X	X	X	X	X	X	X	X	-	X	X	X	X	X	X	X	X
City of Grimes	X	X	X	X	X	X	X	X	X	X	X	X	X	-	X	X	X	X	X	X	X	X
City of Johnston	X	X	X	X	X	X	X	X	X	X	X	X	X	-	X	X	X	X	X	X	X	X
City of Mitchellville	X	X	X	-	X	X	X	X	X	X	X	X	X	-	X	X	X	X	X	X	X	X
City of Pleasant Hill	X	X	X	-	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Jurisdiction	Animal/Plant/Crop Disease	Climate Change	Cyberattacks	Dam Failure	Drought	Earthquake	Expansive Soils	Extreme Temperature	Flash Flooding	Grass/Wildland Fire	HAZMAT incident	Human Disease	Infrastructure Failure	Levee Failure	River Flooding	Sinkholes/Landslide	Structural Fire	Thunderstorm/Lightning/Hail	Tornado	Transportation Incident	Windstorm	Winter Storm
City of Polk City	X	X	X	X	X	X	X	X	X	X	X	X	X	-	X	X	X	X	X	X	X	X
City of Runnells	X	X	X	X	X	X	X	X	X	X	X	X	X	-	X	X	X	X	X	X	X	X
Saylor Township	X	X	X	X	X	X	X	X	X	X	X	X	X	-	X	X	X	X	X	X	X	X
City of Urbandale	X	X	X	X	X	X	X	X	X	-	X	X	X	-	X	X	X	X	X	X	X	X
City of West Des Moines	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
City of Windsor Heights	X	X	X	X	X	X	X	X	X	-	X	X	X	-	X	X	X	X	X	X	X	X
Des Moines Water Works	X	X	X	-	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
School Districts																						
Ankeny, 261	X	X	X	-	X	X	X	X	X	X	X	X	X	-	X	X	X	X	X	X	X	X
Bondurant-Farrar, 720	X	X	X	-	X	X	X	X	X	X	X	X	X	-	X	X	X	X	X	X	X	X
Des Moines Independent, 1737	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Johnston, 3231	X	X	X	X	X	X	X	X	X	X	X	X	X	-	X	X	X	X	X	X	X	X
North Polk, 4779	X	X	X	-	X	X	X	X	X	X	X	X	X	-	X	X	X	X	X	X	X	X
Saydel, 5805	X	X	X	X	X	X	X	X	X	X	X	X	X	-	X	X	X	X	X	X	X	X
Southeast Polk, 6101	X	X	X	-	X	X	X	X	X	X	X	X	X	-	X	X	X	X	X	X	X	X

Jurisdiction	Animal/Plant/Crop Disease	Climate Change	Cyberattacks	Dam Failure	Drought	Earthquake	Expansive Soils	Extreme Temperature	Flash Flooding	Grass/Wildland Fire	HAZMAT incident	Human Disease	Infrastructure Failure	Levee Failure	River Flooding	Sinkholes/Landslide	Structural Fire	Thunderstorm/Lightning/Hail	Tornado	Transportation Incident	Windstorm	Winter Storm
Urbandale, 6579	X	X	X	X	X	X	X	X	X	X	X	X	X	-	X	X	X	X	X	X	X	X
West Des Moines, 6957	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

3.2 MULTI-JURISDICTIONAL RISK ASSESSMENT

For this multi-jurisdictional plan, the risks are assessed for each jurisdiction where they deviate from the risks facing the entire planning area. The planning area is fairly uniform in terms of climate and topography as well as building construction characteristics. Accordingly, the geographic areas of occurrence for weather-related hazards do not vary substantially across the planning area for most hazards. Regarding vulnerability, the more urbanized parts of the county, like the Des Moines metropolitan area, generally have more assets which are vulnerable to weather-related hazards. Rural parts of Polk County tend to have fewer vulnerable assets simply due to the smaller sizes of these communities. However, it may be more difficult for emergency services to reach the rural parts of the county, particularly following tornadoes, severe winter storms, and other hazards which can obstruct vehicular access. Similarly, rural areas tend to have more assets (crops/livestock) which are vulnerable to animal/plant/crop disease. The vulnerability differences across participating jurisdictions are discussed in greater detail in the vulnerability sections of each hazard.

3.2.1 PROBABILITY SCORING METHODOLOGY

The Polk County Hazard Mitigation Planning Committee used the same methodology to score and prioritize the hazards as was used in the previous iteration of this plan. This prioritization was based on a hazard scoring system that considers four elements of risk: probability, magnitude/severity, warning time, and duration. The table below provides definitions for each of the four elements along with associated rating levels.

Table 13 - Probability Score Scale and Definitions

Probability	Definitions
Probability: Reflects the likelihood of the hazard occurring again in the future, considering both the hazard's historical occurrence and the projected likelihood of the hazard occurring in any given year.	
Unlikely	Less than 10% probability in any given year (up to 1 in 10 chance of occurring), history of events is less than 10% likely or the event is unlikely but there is a possibility of its occurrence.
Occasional	Between 10% and 20% probability in any given year (up to 1 in 5 chance of occurring), history of events is greater than 10% but less than 20% or the event could possibly occur.
Likely	Between 20% and 33% probability in any given year (up to 1 in 3 chance of occurring), history of events is greater than 20% but less than 33% or the event is likely to occur.
Highly Likely	More than 33% probability in any given year (event has up to a 1 in 1 chance of occurring), history of events is greater than 33% likely or the event is highly likely to occur.

Table 14 - Polk County Planning Area Probability Results

Hazard	Probability
Animal/Plant/Crop Disease	Unlikely
Climate Change	Highly Likely

Cyber Attacks	Likely
Dam Failure	Unlikely
Drought	Highly Likely
Earthquakes	Unlikely
Expansive Soils	Unlikely
Extreme Temperature	Occasional
Flash Flooding	Highly Likely
Grass or Wildland Fire	Occassional
Hazardous Materials Incident	Highly Likely
Human Disease	Highly Likely
Infrastructure Failure	Highly Likely
Levee Failure	Unlikely
River Flooding	Highly Likely
Sinkholes/Landslide	Occasional
Structural Fire	Highly Likely
Thunderstorm with Lightning and Hail	Highly Likely
Tornado	Highly Likely
Transportation Incident	Highly Likely
Windstorm	Likely
Winter Storm	Highly Likely

3.2.2 HEALTH HAZARD PRIORITIZATION ASSESSMENT

Starting with the 2018 update, this plan update has incorporated a health hazard assessment for each of the hazards, based on the Health Hazard Asessment and Prioritization (hHAP) tool created by the Los Angeles County Department of Public Health (LACDPH) in 2013. Representitives from Polk County Public Health, Broadlawns Medical Center, MercyOne Des Moines Medical Center, Primary Health Care, and UnityPoint Health Des Moines reviewed the previous hHAP ranking results, updated them to reflect changes in risk since the previous plan, and completed the assessment for the two hazards added since 2018 (climate change and cyberattack).

This process scored hazards for four criteria: health severity, community impact, public health system impact, and healthcare system impact. The results of this evaluation, along with the criteria and how they are scored, are found in the tables below. The scores provided by five area healthcare providers were averaged and rounded to the nearest whole number. Scores from three UnityPoint administrators were first averaged amongst themselves to ensure each participating organization's voice had equal weight. The hHAP scores for each individual hazard are also shown in the Hazard Risk Score tables found at the bottom of each hazard profile.

Table 15. Health Hazard Assessment and Prioritization Score Element Definitions and Rating Scales

Element/Score	Definitions
Health Severity: Potential for increase in morbidity, hospitalizations, and/or mortality.	
0 – Not Applicable	There is no elevated health or medical impact associated with this hazard.
1 – Marginal	The hazard presents a minimal threat to safety, health, and wellbeing of the surrounding community.
2 – Limited	May result in moderately elevated rates of severe disease, injury, hospitalizations, and deaths.
3 – Critical	May result in considerably elevated rates of severe disease, injury, hospitalizations, and deaths.
4 – Catastrophic	May result in significantly elevated rates of severe disease, injury, hospitalizations, and deaths.
Community Impact: Potential for disruption of routine community activities (schooling, employment, religious services, sports, entertainment), damage or disruption of communication or infrastructure systems, and interruption of critical social services and resources)	
0 – Not Applicable	There is no potential impact associated with this hazard.
1 – Low	The hazard presents a low threat to the safety, health, and well-being of the surrounding community. Negligible potential to disrupt normal day-to-day activities.
2 – Moderate	May result in moderate impacts and disruptions of normal activities and functions, including communication functionality and capabilities. May cause delay or suspension of social services and resources.
3 – High	Considerable disruption to normal activities and functions, including communication functionality and capabilities. Delay or suspension of social services, resources, and public infrastructure.
4 – Extreme	Significant disruption to normal activities and functions, including communication functionality and capabilities. Destruction or significant delay and/or suspension of social services, resources, and public infrastructure.
Public Health System Impact: Potential for staff illness, injury, or death; Business interruption; Employees unable to report to work; Interruption of critical supplies and resources; Facilities damaged and unusable; Facilities damaged and/or temporarily relocated	
0 – Not Applicable	No potential to disrupt normal day-to-day public health operations. No projected impact on public health personnel, resources, and/or facilities.
1 – Negligible	Negligible potential to disrupt normal day-to-day public health operations. Negligible projected impact on public health personnel, resources, and/or facilities.
2 – Limited	Limited potential to disrupt normal day-to-day public health operations. There is limited projected impact on public health personnel, resources, and/or facilities (small adjustments may be made to staff schedules and work locations; procurement of some additional services and supplies through normal channels).
3 – Critical	Disruption of the day-to-day public health operations would require deferring all non-essential services. Public health personnel and/or facilities are impacted: high absenteeism due to injury, illness, death; infrastructure and building damage. All available personnel, resources, and facilities would be dedicated to performing essential public health emergency services.
4 – Catastrophic	Immediate deferment of all non-essential services. Public health resources would be rapidly overwhelmed due to the impact on personnel and/or facilities: extreme absenteeism, illness, death; infrastructure and building damage. All available personnel, resources, and facilities would be dedicated to performing essential emergency services.
Healthcare System Impact: Potential for staff illness, injury, or death; Business interruption; Employees unable to report to work; Interruption of critical supplies and resources; Facilities damaged and unusable; Facilities damaged and/or temporarily relocated	

0 – Not Applicable	No potential to disrupt normal day-to-day operations. No projected impact on personnel, resources, and/or facilities.
1 – Negligible	Negligible potential to disrupt normal day-to-day operations. Negligible projected impact on personnel, resources, and/or facilities.
2 – Limited	Limited potential to disrupt normal day-to-day operations. There is limited projected impact on personnel, resources, and/or facilities (small adjustments may be made to staff schedules and work locations; procurement of some additional services and supplies through normal channels).
3 – Critical	Disruption of the day-to-day operations would require deferring all non-essential services. Personnel and/or facilities are impacted: high absenteeism due to injury, illness, death; infrastructure and building damage. All available personnel, resources, and facilities would be dedicated to performing essential emergency services.
4 – Catastrophic	Immediate deferment of all non-essential services. Suspension of state regulations and statutes necessary to maintain service capabilities. Resources would be rapidly overwhelmed due to the impact on personnel and/or facilities: extreme absenteeism, illness, death; infrastructure and building damage. All available personnel, resources, and facilities would be dedicated to performing essential emergency services.

Table 16 - Polk County Health Hazard Assessment and Prioritization Ranking Results

Hazard	Health Severity	Community Impact	Public Health System Impact	Healthcare System Impact	Total Health Hazard Score
Animal/Plant/ Crop Disease	2	0	2	0	4
Climate Change	1	1	1	1	4
Cyber Attacks	2	3	2	3	10
Dam Failure	3	1	1	2	7
Drought	1	0	1	1	3
Earthquake	1	1	1	3	6
Expansive Soils	1	0	0	2	3
Extreme Temperature	2	2	2	2	8
Flash Flooding	2	3	1	2	8
Grass/Wildland Fire	0	0	0	0	0
Hazardous Materials Incident	2	1	3	2	8
Human Disease	3	3	4	3	13
Infrastructure Failure	4	3	2	4	13
Levee Failure	1	2	1	1	5
River Flooding	1	3	1	2	7
Sinkholes/Landslide	0	0	0	2	2
Structural Fire	2	1	2	2	7

Thunderstorm/ Lightning/Hail	2	1	1	1	5
Tornado	1	3	3	2	9
Transportation Incident	2	1	1	3	7
Windstorm	1	0	0	1	2
Winter Storm	2	4	2	3	11

3.2.3 ASSETS AT RISK

This section assesses the structures, infrastructure, and other important assets in the planning area that may be at risk to hazards. For a complete listing of the critical faciities in Polk County that were considered in the development of this hazard analysis, see Appendix B – Critical Facilities.

Assessing the vulnerability of the planning area to disaster also involves inventorying the natural, historic, cultural, and economic assets of the area. This is important for the following reasons:

- The plan participants may decide that these types of resources warrant a greater degree of protection due to their unique and irreplaceable nature and contribution to the overall economy;
- If these resources are impacted by a disaster, knowing about them ahead of time allows for more prudent care in the immediate aftermath, when the potential for additional impacts is higher;
- The rules for reconstruction, restoration, rehabilitation, and/or replacement are often different for these types of designated resources;
- Natural resources can have beneficial functions that reduce the impacts of natural hazards, such as wetlands and riparian habitat, which help absorb and attenuate floodwaters; and,
- Losses to economic assets (e.g., major employers or primary economic sectors) could have severe impacts on a community and its ability to recover from disaster.

In the planning area, natural, historic, cultural, and economic assets include the following:

3.2.3.1 THREATENED AND ENDANGERED SPECIES

Currently there are nine different species of flora and fauna which inhabit parts of Polk County and are identified as Threatened, Endangered, Proposed, or Candidate species. The common name, scientific name, and status of these nine species are are listed in Table 17.

Table 17 - Threatened and Endangered Species in Polk County

Common Name	Scientific Name	Status
Eastern prarie winged orchid	Platanthera leucophaea	Threatened

Indiana bat	Myotis sodalist	Endangered
Mead's milkweed	Asclepias meadii	Threatened
Monarch butterfly	Danaus plexippus	Candidate
Northern long-eared bat	Myotis septentrionalis	Threatened
Rusty patched bumble bee	Bombus affinis	Endangered
Topeka shiner	Notropis topeka	Endangered
Tricolor bat	Perimyotis subflavus	Proposed
Western prairie fringed orchid	Platanthera praeclara	Threatened

Source: Center for Biological Diversity https://www.biologicaldiversity.org/programs/population_and_sustainability/T_and_E_map/

3.2.3.2 NATURAL RESOURCES

The Polk County Conservation Board manages 23 parks and natural areas encompassing over 16,000 acres. Table 18 provides the names and locations of parks and conservation areas in Polk County.

Table 18. Parks in Polk County

Park Name	Address	City
Beaver Creek Greenbelt	9631 NW 121St	Granger
Brown's Woods	195 SE Brown's Woods Ct.	West Des Moines
Carney Marsh	698 SE 65th St.	Ankeny
Chichaqua Bottoms Greenbelt	8700 NE 126 Avenue	Maxwell
Chichaqua Valley Trail	8123 NEW 88th St.	Bondurant
Easter Lake Park	2830 Easter Lake Drive	Des Moines
Eagle Roost Wildlife Area	Highway 65	Des Moines
Engeldinger Marsh	11821 NE 118 Ave.	Maxwell
Fort Des Moines Park	7200 SE 5th St	Des Moines
Fourmile Creek Greenway	3769 NE 38th St.	Des Moines
Gay Lea Wilson Trail	University Avenue	Pleasant Hill
Great Western Trail	George Flagg Parkway	Des Moines
High Testle Trail	W First St.	Ankeny
Jester Park	12130 NW 128th St.	Granger
Lauridsen Skatepark	901 2nd Avenue	Des Moines
Mally's Park / Trails End Wildlife Area	5792 NE Berwick Dr.	Berwick
Mark C. Ackelson Trail	2830 Easter Lake Drive	Des Moines
Oralabor Gateway Trail	2803 SW Glenbrooke Blvd	Ankeny
Strasser Woods State Preserve	1552 E 36th Street	Des Moines
Sycamore Trails	Euclid Avenue	Des Moines

Thomas Mitchell Park	4520 NE 108 St.	Mitchellville
Trestle to Trestle Trail	2309 Euclid	Des Moines
Yellow Banks Park	6801 SE 32nd Ave.	Pleasant Hill

Source: Polk County Parks and Trails website accessed 2/20/2024, https://www.polkcountyiowa.gov/conservation/parks-trails/

In addition to the assets listed in the table above, Polk County contains a considerable amount of wetlands. Wetlands support a diverse range of flora and fauna and are an integral part of healthy ecosystems in Polk County. The following table lists the acres of wetlands in the different participating jurisdictions.

Table 19. Wetlands in Polk County

Jurisdiction	Acres of Wetlands
Alleman	6.07
Altoona	122.81
Ankeny	257.02
Bondurant	17.94
Clive	228.28
Delaware Township	189.34
Des Moines	2,094.44
Elkhart	13.32
Grimes	45.28
Johnston	811.43
Mitchellville	4.78
Pleasant Hill	372.80
Polk City	134.32
Runnells	2.26
Saylor Township	960.04
Urbandale	203.73
West Des Moines	1,418.88
Windsor Heights	8.29
Unincorporated Polk County	8,498.68

3.2.3.3 HISTORIC RESOURCES

The National Register of Historic Places is the official list of the Nation's cultural resources worthy of preservation. Authorized under the National Historic Preservation Act of 1966, the National Register is part of a national program to coordinate and support public and private efforts to identify, evaluate, and protect our historic and archeological resources.

The National Register is administered by the National Park Service under the Secretary of the Interior. Properties listed in the National Register include districts, sites, buildings, structures and

objects that are significant in American history, architecture, archeology, engineering, and culture. The properties in Polk County that are on the National Register of Historic Places are identified in Table 20.

Table 20 - Polk County, Iowa Properties on the National Register of Historic Places

Property	Address	City	Date Listed
Abraham Lincoln High School	2600 SW 9th Street	Des Moines	10/24/2002
Acadian Manor Historic District	2801-2815 Grand Ave.	Des Moines	9/25/2020
Ainsworth William W. and Elizabeth J. House	1310 7th St.	Des Moines	10/22/1998
Alleman, Richard L. and Verda M. Farm District	2701 NW. 158th Ave.	Slater	5/1/2015
American Republic Insurance Company Headquarters Buildign	601 6th Ave.	Des Moines	12/22/2015
Andrews Josiah House	1128 27th Street	Des Moines	11/1/1988
Apperson-Iowa Motor Car Company Building	1420 Locust Street	Des Moines	4/29/2016
Argonne Building	1723 Grand Ave.	Des Moines	9/25/2020
Ashby Manor Historic District	Roughly bounded by Beaver Ave. and Ashby Park	Des Moines	9/4/1992
Ayrshire Apartments	1815 6th Ave.	Des Moines	10/25/1996
Bailey William H. and Alice House	1810 6th Ave.	Des Moines	10/25/1996
Baker C. H. Double House	1700–1702 6th Ave.	Des Moines	10/25/1996
Baker–DeVotie–Hollingsworth Block	516-526 E Grand Ave.	Des Moines	1/10/2008
Bartlett Walter M. Double House	1416-1418 6th Ave.	Des Moines	10/22/1998
Bates Park Historic District	4th Street between Orchard and Clark Sts.	Des Moines	10/25/1996
Baum, William A. and Etta Cottage	1604 8th Street	Des Moines	10/25/1996
Beeson Byron A. House	1503 5th Ave.	Des Moines	10/25/1996
Bell Hill McClelland House	1091 26th Street	Des Moines	11/1/1988
Benham F. A. House	716 19th St.	Des Moines	11/05/98
Big Creek Schoolhouse	112 3rd Street	Polk City	8/11/2004
Boyd, Byron and Ivan House	304 42nd Street	Des Moines	4/6/2004
Boyt Company Building	210 Court Ave.	Des Moines	3/10/2009
Bryn Mawr Apartments	511 29th Street	Des Moines	10/12/2017
Burns United Methodist Church	811 Crocker Street	Des Moines	6/15/1977
Camp Dodge Pool District	Buildings A22–A24 Camp Dodge	Johnston	2/17/1995
Case Larnerd House	3111 Easton Blvd.	Des Moines	6/21/1982
Chaffee–Hunter House	1821 8th St.	Des Moines	10/22/1998
Chamberlain, D.S., Building	1312 Locust St.	Des Moines	6/28/2007

Property	Address	City	Date Listed
Carpenter James Sansom House	3320 Kinsey Ave.	Des Moines	4/23/1998
Chautauqua Park Historic District	Roughly bounded by 16th Street Hickman Rd. and Chautauqua Pkwy.	Des Moines	3/22/1990
Civic Center Historic District	Des Moines River Center Street Dam to Scott Ave. Dam including both banks	Des Moines	12/7/1988
Clemens Automobile Company Building	200 10th St.	Des Moines	5/6/2009
College Corner Commercial Historic Business District	Euclid Ave. between Second and Third Aves.	Des Moines	4/23/1998
Cottage Grove Avenue Presbyterian Church	1050 24th Street	Des Moines	9/12/2016
Court Avenue Bridge	Court Ave. over Des Moines River	Des Moines	5/15/1998
Crane Building	1440 Walnut	Des Moines	8/30/2001
Crawford House	2203 Grand Ave.	Des Moines	1/27/1983
Cummins Albert Baird House	2404 Forest Dr.	Des Moines	6/30/1982
Darling Jay Norwood and Genevieve Pendleton House	2320 Terrace Rd.	Des Moines	9/30/1992
Denny Professor Charles O. House	1084 Twenty-fifth Street	Des Moines	9/8/1988
Des Moines Art Center	4700 Grand Avenue	Des Moines	12/6/2004
Des Moines Building	405 6th Ave.	Des Moines	10/16/2013
Des Moines Fire Department Headquarters— Fire Station No. 1 and Shop Building	900 Mulberry St., 100 9th St.	Des Moines	4/7/2014
Des Moines Saddlery Company Building	307–311 Court Ave.	Des Moines	6/27/1985
Des Moines Western Railway Freight House	625 E. Court Ave.	Des Moines	7/10/2008
Drake University Campus Historic District	Roughly two blks. Along University Ave. near Twenty-fifth Street	Des Moines	9/8/1988
Earle & LeBosquet Block	407-409 Court Ave.	Des Moines	6/11/2009
East Des Moines Commercial Historic District	Roughly bounded by E. 4th, Des Moines, E. 6th, and E. Locust Sts.	Des Moines	3/29/2019
East Des Moines Industrial Historic District	Roughly E. 2nd to E. 5th & E. Walnut to E. Market Sts.	Des Moines	10/5/2017
Elliot Furniture Company	424 E. Locust Street	Des Moines	1/14/2015
Elmwood, The- The Oaks-The Birches	2315 Grand Ave.	Des Moines	2/19/2021
Equitable Life Insurance Company of Iowa Building	604 Locust St. & 316 6th Ave.	Des Moines	4/21/2015
Evans, Edward B. and Nettie E., House	1410 19th St.	Des Moines	4/1/2002
Farmhouse, Olmsted Family	4010 70th Street	Urbandale	8/9/2019

Property	Address	City	Date Listed
Fire Station No. 4	1041 8th Street	Des Moines	6/27/1979
Firestone District Office and Warehouse	1775 East Euclid Street	Des Moines	12/9/2022
First Methodist Episcopal Church	10th and Pleasant Sts.	Des Moines	4/12/1984
Fish and Game Pavilion and Aquarium	Iowa State Fairgrounds	Des Moines	12/23/1991
Fitch, F.W., Company Historic District	300-306 15th & 1510-1526 Walnut Sts.	Des Moines	4/9/2013
Fleming Building	218 6th Avenue	Des Moines	5/22/2002
Flynn Farm, Mansion, and Barn	2600 111th Street	Des Moines	11/30/1973
Flynn-Griffin Building	319 7th Street	Des Moines	5/3/2016
Fort Des Moines Provisional Army Officer Training School	Fort Des Moines Military Reservation	Des Moines	5/30/1974
Franklin Apartments	1811 6th Ave.	Des Moines	10/25/1996
Gabriel Rees House	1701 Pennsylvania Ave.	Des Moines	12/1/1978
Goddard Bungalow Court Historic District	1410-21 Goddard Court, 1232 14th Street	Des Moines	11/21/2000
Goode, Lowry W. and Hattie N. First North Des Moines House	1813 7th St.	Des Moines	10/22/1998
Grand View College (Old Main)	1200 Grandview Ave.	Des Moines	5/23/1978
Greek Orthodox Church of Saint George	1118 35th Street	Des Moines	2/28/1997
Greenwood Park Plats Historic District	Roughly 39th to 42nd Sts., approx. Grand Ave. to Center & Pleasant Sts., 4006, 4024 Grand Ave.	Des Moines	4/24/2013
Grocers Wholesale Company Building	22 West Ninth Street	Des Moines	4/25/2008
Haley F.E. Double House	1233-1235 7th St.	Des Moines	10/22/1998
Hallett Flat—Rawson & Co. Apartment Building	1301-1307 Locust St.	Des Moines	12/1/2000
Harbach, L. and Sons Furniture Warehouse and Factory Company	300-316 SW. 5th Street	Des Moines	12/21/2015
Hatton Dr. John B. and Anna M. House	1730 7th Street	Des Moines	4/23/1998
Hawkeye Insurance Company Building	209 Fourth Street	Des Moines	4/28/1986
Hawkeye Transfer Company Warehouse	702 Elm St.	Des Moines	3/22/2010
Hayes, William B. House	1547 Arlington Ave.	Des Moines	10/25/1996
Hazen, Allen Water Tower	4800 Hickman Road	Des Moines	8/11/2004
Henshie-Briggs Row House	1106 High Street	Des Moines	8/8/2001
Herndon Hall	2000 Grand Ave.	Des Moines	7/27/1977
Herring Motor Car Company Building	110 W. 10th Street	Des Moines	12/6/2004
Herrold Bridge	NW 88th Ave. over Beaver Creek	Herrold Vicinity	5/15/1998
Highland Park Historic Business District at Euclid and Sixth Avenues	Roughly jct. of Euclid Ave. and Sixth Ave.	Des Moines	7/15/1998

Property	Address	City	Date Listed
Hippee Building	206 6th Ave.	Des Moines	4/20/2018
Hohberger Building	502-506 E. Locust St.	Des Moines	9/12/2002
Home Federal Savings and Loan Association of Des Moines Building	601 Grand Ave.	Des Moines	2/1/2017
Home of Marshall's Horseradish	1546 2nd Place	Des Moines	10/22/1998
Homestead Building	303 Locust Street	Des Moines	3/5/1982
Hotel Fort Des Moines	10th and Walnut Sts.	Des Moines	9/16/1982
Hotel Kirkwood	400 4th Street, a.k.a. 400 Walnut Street	Des Moines	12/10/2003
Hotel Randolph	200-204 4th St.	Des Moines	6/11/2009
Hubbell Building	904 Walnut Street	Des Moines	8/11/2004
Hubbell Warehouse	340 SW 5th Street	Des Moines	11/12/2010
I.O.O.F. (International Order of Fellows) Valley Junction	216-218 5th Street	West Des Moines	11/9/2017
Ingersoll Place Plat Historic District	28th St., Linden and High Sts.	Des Moines	11/21/2000
Iowa Commission for the Blind Building	524 4th St	Des Moines	7/1/2010
Iowa-Des Moines National Bank Building	520 Walnut Street	Des Moines	7/10/1979
Iowa Ford Tractor Company Repair and Warehouse Building	213 13th Street	Des Moines	3/12/2021
Iowa State Capitol	Grand Ave. and E. 12th Street	Des Moines	10/21/1976
Iowa State Fair and Exposition Grounds Historic District	E. Thirtieth Street and Grand Ave.	Des Moines	9/14/1987
Iowa State Historical Building	E. 12th and Grand Ave.	Des Moines	11/14/1978
Johnson, Capt. Nicholas W. and Emma House	Jct. of 21st Street and University Ave.	Des Moines	12/6/1990
Johnstone, Dr. Anna E. and Andrew A. House	1810 8th Street	Des Moines	10/25/1996
Jones, G.W., Building	1430 Locust Street	Des Moines	4/29/2016
Jordan House	2251 Fuller Rd.	West Des Moines	12/10/1973
Keeler, Rev. R. W. and Fannie E. House	1430 10th Street	Des Moines	11/4/1993
Kingman Place Historic District	27th to 31st Sts., Kingman Blvd., Rutland St. and Cottage Ave.	Des Moines	11/21/2000
Kirkham, Francis M. House	1026 Twenty-fourth Street	Des Moines	9/8/1988
Knotts, Nellie and Thomas House	1021 Twenty-sixth Street	Des Moines	9/8/1988
Kromer Flats	1433–1439 6th Ave.	Des Moines	10/25/1996

Property	Address	City	Date Listed
Lexington, The	The 1721 Pleasant Street	Des Moines	12/12/1976
Liberty Building	418 Sixth Ave	Des Moines	7/22/2010
Linden Heights Historic District	Foster Drive, Glenview Drive, Woodlawn, Park Hill Drive west of SW 42nd Street	Des Moines	12/10/2003
Lord Richard T. C. and William V. Wilcox House	2416 Kingman Blvd.	Des Moines	9/8/1988
Luston-House #02437	1440 63rd Street	Windsor Heights	6/12/2020
Mack-International Motor Truck Corporation Building	121 12th Street	Des Moiens	1/25/2017
Mahnke House	2707 High Street	Des Moines	10/13/1983
Maine, The	1635 6th Ave.	Des Moines	10/25/1996
Maish House	1623 Center Street	Des Moines	4/11/1977
Masonic Temple of Des Moines	1011 Locust Street	Des Moines	8/29/1997
Mattes, Minnie Y. and Frank P. House	1305 34th St.	Des Moines	12/16/2009
Methodist Deaconess Institute–Esther Hall	921 Pleasant St.	Des Moines	3/4/2009
Middlesex Plat Historic District	Center to Woodland Ave., 31st to 35th Sts.	Des Moines	11/21/2000
Municipal Building	E. 1st and Locust Sts.	Des Moines	11/10/1977
Murillo Flats	605 16th St.	Des Moines	6/9/2009
National Biscuit Company Building	1001 Cherry St.	Des Moines	5/6/2009
Naylor House	944 W. 9th Street	Des Moines	7/10/1974
New Lawn, The	1245 6th Ave.	Des Moines	10/25/1996
Newens Sanitary Dairy Historic District	2300-2312 University Avenue	Des Moines	12/17/2003
Norman Apartment Building	3103 University Ave.	Des Moines	9/8/1988
Northwestern Hotel	321 E. Walnut	Des Moines	1/12/1984
Oaklands, The Historic District	Oakland and Arlington Aves. Between Franklin and College Aves.	Des Moines	10/25/1996
Odenweller F. F.–James P. and Nettie Morey House	1115 27th Street	Des Moines	11/1/1988
Olmstead-Urban House	4010 70th Street	Urbandale	8/2/2019
Owl's Head Historic District	Ridge Rd. Forest Dr. 28th and 29th Sts.	Des Moines	10/11/1978
Peak, George B. House	1080 22nd Street	Des Moines	11/14/1978
Perry and Brainard Block	1601 6th Ave.	Des Moines	10/25/1996
Plymouth Place	4111 Ingersoll Ave.	Des Moines	4/14/2015

Property	Address	City	Date Listed
Polk County Courthouse	6th and Mulberry Sts.	Des Moines	4/30/1979
Polk County Homestead and Trust Company Addition Historic District	Both sides of 7th & 8th Sts., S. of Franklin & N. of College Aves.	Des Moines	10/4/2016
Prospect Park Second Plat Historic District	Roughly along the Des Moines River S to Franklin Ave. between 6th Ave. and 9th Street	Des Moines	4/23/1998
Public Library of Des Moines	Locust Street	Des Moines	7/25/1977
Register and Tribune Building	715 Locust Street	Des Moines	6/20/2016
Reynolds, Anson O. House	1022 Twenty-sixth Street	Des Moines	9/8/1988
Riverview Park Plat Historic District	Arlington Ave. between Franklin and 6th Aves.	Des Moines	10/25/1996
Rollins, Ralph House	2801 Fleur Dr.	Des Moines	11/14/1978
Rumely–Des Moines Drug Company Building	110 SW. Fourth Street	Des Moines	11/16/1989
Saint John's Roman Catholic Church	1915 University Ave.	Des Moines	9/8/1987
Salisbury House	4025 Tonawanda Dr.	Des Moines	7/20/1977
Sargent's Garage	510 College Ave.	Des Moines	10/22/1998
Savery Hotel	401 Locust St.	Des Moines	11/5/1998
Scheibe, Julius Cottage	815 College Ave.	Des Moines	10/22/1998
Scott, Mary A. and Caleb D. House	1014 Twenty-sixth Street	Des Moines	9/8/1988
Schmitt and Henry Manufacturing Company	309 SW 8th St.	Des Moines	3/17/2010
Scottish Rite Consistory Building	6th Ave. and Park Street	Des Moines	9/29/1983
Seth Richards Commercial Block	300-310 Court Avenue	Des Moines	3/11/2005
Sherman Hill Historic District (Boundary Increase and Decrease)	Generally between 15th St., Woodland Ave., MLK Pkwy., & I-235	Des Moines	3/7/2012
Sherman, Hoyt Place	1501 Woodland Ave.	Des Moines	9/19/1977
Sherman, Lampson P. House	1052 Twenty-sixth Street	Des Moines	9/8/1988
Simmons, John P. House	1113 27th Street	Des Moines	11/1/1988
Southwest Fifth Street Bridge	SW Fifth Street over Raccoon River	Des Moines	5/15/1998
Sixth and Forest Historic District	Jct. of 6th and Forest Aves. NE and NW corners	Des Moines	10/25/1996
Smouse, David W., Opportunity School	2820 Center Street	Des Moines	10/24/2002
Southeast Water Trough	SE 11th and Scott Street	Des Moines	10/8/1976
St. Ambrose Cathedral and Rectory	607 High Street	Des Moines	3/30/1979

Property	Address	City	Date Listed
St. Anthony's Church	15 Indianola Road	Des Moines	7/23/2021
St. Paul's Episcopal Church	815 High St.	Des Moines	3/31/2010
Standard Glass and Paint Company Building	112 10th Street	Des Moines	12/6/2004
Stevenson, Samuel A. and Margaret, House	2940 Cottage Grove Ave.	Des Moines	1/3/1985
Stoner, Thomas I., House	1030 56th Street	Des Moines	2/12/1992
Stuart, Dr. Richard and Paulina, House	1060 Twenty-fifth Street	Des Moines	9/8/1988
Studebaker Corporation Branch Office Building	1436-42 Locust Street	Des Moines	12/15/2015
Studio Building	524 E. Grand Ave.	Des Moines	11/14/1978
Sylvan Theater Historic District	In Greenwood Park on W side of 45th Street 1 block S of jct. with Grand Ave.	Des Moines	8/15/1995
Syndicate Block	501 E. Locust	Des Moines	10/1/2001
Taft-West Warehouse	215-222 Court Avenue	Des Moines	12/20/2006
Teachout Building	500-502 E. Locust St.	Des Moines	4/29/1999
Terrace Hill	2300 Grand Ave.	Des Moines	6/14/1972
Theodore Roosevelt High School	4419 Center Street	Des Moines	10/24/2002
Trent–Beaver House	1802 6th Ave.	Des Moines	10/25/1996
Trier, Paul J. and Ida, House	6880 N.W. Beaver Dr.	Johnston	11/9/1988
Trinity Methodist Episcopal Church	1548 8th Street	Des Moines	4/23/1998
Turner, Susie P., Double House	1420-1422 8th St.	Des Moines	10/22/1998
Universalist Church	420 4th Street	Mitchellville	9/6/2005
U.S. Post Office	2nd and Walnut Sts.	Des Moines	11/19/1974
Vail, Mrs. Marian D.–Prof. Charles Noyes Kinney House	1056 26th Street	Des Moines	11/1/1988
Val-Air Ballroom	301 Ashworth Road	West Des Moines	10/28/2022
Valley Auto Co.-Morgan Auto Co. Garage	333 5th Street	West Des Moines	5/21/2021
Valley Junction Commercial Historic District	100-318 5th St. (even side 300 only) & cross streets	West Des Moines	10/12/2017
Valley Junction-West Des Moines City Hall and Engine House	137 5th Street	West Des Moines	2/17/1983
Veneman's Bungalow Court Historic District	1101-115 Droukas Court, 1228, 1232 E. 12th St.	Des Moines	11/21/2000
Wallace, Henry, House	756 16th Street	Des Moines	5/14/1993

Property	Address	City	Date Listed
Walnut Tire and Battery Co.-Globe Publishing Company Building	1417-1425 Walnut Street	Des Moines	1/25/2017
Warfield, Pratt and Howell Company Warehouse	100 West Court Ave.	Des Moines	5/15/1985
Washington and Elilzabeth Miller Tract-Center-Soll Community Historic District	Roughly 35th to 38th Sts. between 3500-3607 Grand Ave. to Center St.	Des Moines	1/25/2017
Weitz, Charles H. and Lena May, House	1424 5th Ave.	Des Moines	10/22/1998
West Chester	3520 Grand Ave.	Des Moines	1/19/1984
West Ninth Streetcar Line Historic District	W. Ninth Street from University Ave. to Hickman Rd.	Des Moines	4/23/1998
Wherry Block	1600-1602 6th Ave.	Des Moines	10/22/1998
Woodland Place Historic District	25th to 27th St. to Woodland Ave.	Des Moines	11/21/2000
Youngerman Block	206-208 4th St.	Des Moines	6/10/2009
Younker Brothers Department Store	713 Walnut St.	Des Moines	3/17/2010

Sources: State Historical Society of Iowa; National Register of Historic Places

3.2.3.4 ECONOMIC RESOURCES

Polk County has emerged as an attractive location for both businesses and individuals in search of economic opportunity. This is reflected through several recent national rankings including[1]:

- (#1) Top 10 Places for Young Professionals to Live – *Forbes, 2023*
- (#4) Best U.S. Cities for Young Adults – *Homebuyer.com, 2024*
- (#8) Top Places to Start a Small Business – *LendingTree, 2023*
- (#16) Top 25 Up-and-Coming Tech Markets – *CBRE, 2023*
- (#19) Best Places to Live in the U.S. – *U.S. News & World Report, 2023*

Because of Polk County's attractive economic qualities, new businesses have moved to the region, and existing businesses have expanded their operations. Table 21 provides details on major employers in the planning area as identified by the Greater Des Moines Partnership.

Table 21 - Major Non-Government Employers in Polk County and Greater Des Moines Region

Employer Name	Main Locations	Product or Service	Employees
Hy-Vee, Inc.	West Des Moines	Midwest grocery store	11,782

[1] Greater Des Moines Partnership. "Greater Des Moines Top Rankings and Ratings," 2024. https://www.dsmpartnership.com/news-media/rankings.

Employer Name	Main Locations	Product or Service	Employees
Wells Fargo & Company	Des Moines, West Des Moines	Financial services	More than 11,000
MercyOne	Metro-wide	Healthcare (includes hospitals and home care)	5,641
Principal	Des Moines	Global investment management, retirement, insurance and group benefits	5,595
UnityPoint Health	Des Moines, West Des Moines	Healthcare	5,147
Amazon	Bondurant, Grimes, Ankeny	Distribution	4,100
John Deere: Des Moines Works, Financial, and Intelligent Solutions Group (ISG)	Ankeny, Johnston, Urbandale	Agricultural machinery, GPS/ag equipment software, consumer financial services	3,800
Vermeer Corporation	Pella	Agriculture, construction, and mining equipment manufacturing	3,600
Nationwide	Des Moines	Insurance	3,300
JBS USA	Marshalltown	Pork Processing and Packaging	2,300
Corteva Agriscience	Johnston	U.S.-based leading global agriculture comany	2,255
Pella Corporation	Pella	Windows, doors, and skylights	2,224
Maverik/Kum & Go	Des Moines	Convenience store chain	2,000
Mercer Health & Benefits, LLC	Urbandale	Strategic consulting & brokerage services for group medical, dental, life, ST/LT disability, vision flex, retirement, communications and investment consulting	1,800
Casey's General Stores, Inc	Ankeny	Gasoline, prepared food, fountain items, grocieries, and other merchandise	1,750
UPS	Des Moines	Logistics and distribution, transportation and freight, customers brokerage	1,721
Wellmark Blue Cross Blue Shield of Iowa	Des Moines	Health insurance, Medicare PDP/PPO/supplement/Advantage, dental insurance, flex benefits, HSAs/HRAs	1,700
Bridgestone Americas Tire Operations	Des Moines	Agricultural tires	1,600
Athene	West Des Moines	Fixed indexed annuities	1,600
Lumen	Des Moines	Telecommunications, ISP	1,500

Employer Name	Main Locations	Product or Service	Employees
Tyson Fresh Meats, Inc.	Perry	Processor and marketer of chicken, beef, and pork	1,200
Baker Group	Ankeny	Commercial and industrial design-build HVAC, electrical, plumbing, piping, sheet metal, automation, card access, video, fire alarm and service	1,176
Emerson – Fisher Division	Marshalltown	Control valves and systems – divisional headquarters	1,135
Farm Bureau Financial Services	West Des Moines	Insurance, investments, and wealth management	1,111
EMC Insurance Companies	Des Moines	All lines property/casualty commercial insurance and life insurance across the U.S., plus reinsurance worldwide	1,100
The Iowa Clinic, P.C.	West Des Moines	Independent physician owned multi-specialty clinic with 250+ providers	1,100
The Waldinger Corporation	Des Moines	Complete mechanical, sheet metal, electrical, structured cabling and service contractor	1,100
Dee Zee, Inc.	Des Moines, Pleasant Hill	Aftermarket automotive accessories	1,054
MidAmerican Energy Company	Des Moines	Energy and complementary services	1,000
500 to 999 employees			
CDS Global	Des Moines	Business process outsourcing for magazine media companies, nonprofits, and consumer products companies	994
Drake University	Des Moines	Higher education	983
Lennox	Marshalltown	Heating, air conditioners	915
Sammons Financial Group	West Des Moines	Life insurance, annuities and retirement planning solutions	901
Atlantic Coca-Cola Bottling Company	Des Moines	Coca-Cola products including Powerade, BODYARMOR, Monster Energy	880
Prairie Meadows	Altoona	24-hour casino, horse racing, hotel, events center, concerts, steakhouse, café, Sports Book	878
ChildServe	Johnston	Children's and young adults' special health care needs	851
Grinnel Mutual Reinsurance Company	Grinnell	Personal auto, recreational vehicle, home, farm and small business insurance products; reinsurance	800
Smithfield Food Inc.	Des Moines	Fresh pork products	750

Employer Name	Main Locations	Product or Service	Employees
JELD-WEN	Grinnell	Manufacture of wooden, steel and patio sliding doors and vinyl windows	725
Bronwell's	Montezuma, Grinnell	Top firearms supplier – warehouse and retail	715
Katecho	Des Moines	Medical device contract manufacturing	700
Dotdash Meredith	Des Moines	Media and marketing company	697
American Equity Investment Life Holding Company	West Des Moines	Fixed index and fixed rate annuity products	688
Grinnell College	Grinnell	Higher education	680
Kemin Industries, Inc.	Des Moines	Global ingredient manufacturer	600
Titan International, Inc	Des Moines	Manufacture of agricultural and off road tires	600
Businessolver	West Des Moines	Benefits technology company	595
LSI (Lutheran Services in Iowa)	Des Moines	Human services	582
F&G	Des Moines	Fixed index annuities, fixed annuities and indexed universal life insurance	571
3M Company	Knoxville	Scotch brand pressure-sensitive industrial tapes	550
Wittern Group	Clive	Automated dispensing and controlled access equipment manufacture and design	550
Cognizant	Des Moines	Consulting/information technology and business process services	550
Windsor Windows and Doors	West Des Moines, Norwalk	Window and door products for residential and light commercial construction	550
Optimae LifeServices, Inc.	Des Moines	Community, behavioral health, residential and rehabilitation services; supported employment services	525
GuideOne Insurance	West Des Moines	Full commercial P&C product suite for churches, schools and education facilities, senior living centers, non-profits and small businesses	509
Precision, Inc.	Pella	Headquarters and convey component manufacturing	500
Musco Sports Lighting, LLC	Oskaloosa	Headquarters, mobile large area lighting, signage	500
DGS Foods	Des Moines	Retail food markets	500
Cardinal IG Co., Division of Cardinal Glass Industries, Inc.	Greenfield	Insulated glass units	500
300 to 499 employees			

Employer Name	Main Locations	Product or Service	Employees
Bankers Trust	Des Moines	Commercial and consumer banking services, wealth management and investment management	470
The Weitz Company	Des Moines	General contractor, construction manager, design builder	452
Andersen Windows and Doors	Des Moines	EMCO brand storm doors	450
Holmes Murphy	Waukee	Property caualty, employee benefits	444
ITA Group, Inc.	West Des Moines	Provider of customer loyalty solutions	440
Weiler, Inc.	Knoxville	Manufacture asphalt paving mixtures and blocks	420
Baker Electric Inc.	Des Moines	Design/build electrical and technology cabling	405
B&G Foods, Inc	Ankeny	Spices, herbs, seasonings, dry mixes	400
EFCO Corp.	Des Moines	Forming and shoring systems for concrete construction	400
Meta	Altoona	Data centers	400
Mittera	Des Moines, Urbandale	Printed brochures, mailing, fulfillment, digital media	375
Orchard Place	Des Moines	Mental health and substance abuse services	372
Unite Private Networks	West Des Moines	Internet, point to point, dark fiber and wave	370
Quality Manufacturing Corporation	Urbandale	Full-service metal fabricator	360
LCS	Des Moines	Senior living development, real estate, management and group purchasing	360
QCI	West Des Moines	Networks, storage, servers, virtualization, collaboration, DR, backup/recovery, security	355
Clow Valve Co.	Oskalooska	Heaquarters and valves, hydrants, cast iron gates	350
RSM US LLP	Des Moines	Audit, tax and consulting services	337
LifeServe Blood Center	Des Moines	Blood bank	333
Collins Aerospace	West Des Moines	Turbine engine fuel nozzles and manifolds	325
Turner Construction Company	West Des Moines	Construction management, general contracting, design building, CMAR	315

Employer Name	Main Locations	Product or Service	Employees
Tri-City Electric Co.	Des Moines	Electrical construction, renewable energy, power testing, engineering and integration, and other services	302

Source: The Greater Des Moines Partnership; https://www.dsmpartnership.com/growing-business-here/business-climate/major-employers

3.2.4 PAST AND FUTURE LAND USE AND DEVELOPMENT

The following sections provide details regarding future growth, land use and development. The information in this section comes from information provided by each of the participating jurisdictions as well as other sources, cited throughout. Where available, maps are provided to facilitate consideration of hazard areas in future development plans as well as potential growth area.

Polk County is the most populous county in the state of Iowa, with a population of over 490,000. Population growth is not a new phenomena for Polk County as it has never recorded a population decrease over 17 decennial censuses between 1860 and 2020. Polk County is home to Des Moines, which is the capital of Iowa and the State's largest city. The Des Moines Metropolitan area has generally been the center of population growth in Polk County. To this point, the population of many suburbs around Des Moines grew by more than 20% between 2010 and 2020. While growth and projected growth are indicators of the vitality of the area, growth can bring challenges which planners and community officials must address. Additional details on population growth in Polk County communities are provided in the following paragraphs, as well as in Table 22.

Much of northern Polk County is still primarily agricultural land. However, growth in Ankeny, Elkhart, and Polk City has increased urbanization growth in the northern section of the county, and future growth is likely to continue this trend. While urbanization is not expected to consume all of the surrounding agricultural lands, it does remove some of the critical ecosystem services (e.g. water infiltration into soil versus impervious surfaces and grey infrastructure). Furthermore, growth in Ankeny's commercial districts will likely increase both personal and commercial traffic in the area. Already the city has found the need to expand interstate interchanges and widen roads to accommodate this traffic increase.

The eastern portion of Polk County is similar to the northern portion in that it is largely dominated by agricultural land. Although there are fewer communities dotting the eastern portion of Polk County, these communities have still experienced notable growth since 2010. The population of the City of Bondurant, in particular, grew by more than 90% between 2010 and 2020, which is the largest among all Polk County jurisdictions participating in the latest plan update. Altoona is another community in the eastern half the county which experienced notable growth, increasing by 34% between 2010 and 2020.

The western communities in Polk County have also grown in population since 2010, and several of these communities have experienced significant growth. Between 2010 and 2020, the cities of West Des Moines, Johnston, and Grimes grew by 21%, 39%, and 87%, respectively. Commercial and

industrial growth, is pushing to the western county boundary in West Des Moines, Urbandale, and Grimes.

The southern portion of Polk County has experienced growth as well, but not as great as the rest of the county. This portion of Polk County mainly consists of southern Des Moines, which grew by 4.8% between 2010 and 2020. The Des Moines International Airport, which is the largest airport in Iowa, is near the southern border of the county, and commercial and industrial development which is commonly found around large airports is also present in this part of Polk County.

According to the U.S. Census Bureau, Polk County's population increased by more than 14% from 2010 to 2020. Table 22 provides population growth statistics for all participating jurisdictions in Polk County, as well as for the county as a whole.

Table 22 - Polk County Population Growth, 2010-2020

Jurisdiction	Total Population 2010	Total population 2020	2010-2020 # Change	2010-2020 % Change
Alleman	432	423	-9	-2.08%
Altoona	14,541	19,565	5,024	34.55%
Ankeny	45,582	67,887	22,305	48.93%
Bondurant	3,860	7,365	3,505	90.80%
Clive	15,447	18,601	3,154	20.42%
Delaware Township	8,317	9,758	1,441	17.33%
Des Moines	204,220	214,133	9,913	4.85%
Elkhart	683	882	199	29.14%
Grimes	8,246	15,392	7,146	86.66%
Johnston	17,278	24,064	6,786	39.28%
Mitchellville	2,254	2,485	231	10.25%
Pleasant Hill	8,785	10,147	1,362	15.50%
Polk City	3,418	5,543	2,125	62.17%
Runnells	507	457	-50	-9.86%
Saylor Township	6,472	6,287	-185	-2.86%
Urbandale	39,463	45,580	6,117	15.50%
West Des Moines	56,609	68,723	12,114	21.40%
Windsor Heights	4,860	5,252	392	8.07%
Polk County Totals	**430,640**	**492,401**	61,761	14.34%

Source: U.S. Bureau of the Census, 2010 and 2020 Decennial Census; Population Statistics are for entire incorporated areas as reported by the U.S. Census Bureau

Along with population growth generally comes an increase in the number of housing units. Table 23 provides the change in numbers of housing units in the planning area from 2010 to 2020.

Table 23 - Change in Housing Units, 2010-2020

Jurisdiction	Housing Units 2010	Housing Units 2020	2010-2020 # Change	2010-2020 % change
Alleman	152	157	5	3.29%
Altoona	5,702	8,007	2,305	40.42%
Ankeny	18,339	27,971	9,632	52.52%
Bondurant	1,422	2,376	954	67.09%
Clive	6,077	7,270	1,193	19.63%
Delaware Township	N/A			
Des Moines	89,052	95,082	6,030	6.77%
Elkhart	269	359	90	33.46%
Grimes	3,272	6,062	2,790	85.27%
Johnston	6,618	9,896	3,278	49.53%
Mitchellville	693	711	18	2.60%
Pleasant Hill	3,587	4,155	568	15.83%
Polk City	1,276	2,015	739	57.92%
Runnells	187	189	2	1.07%
Saylor Township	N/A			
Urbandale	16,319	18,366	2,047	12.54%
West Des Moines	26,219	32,200	5,981	22.81%
Windsor Heights	2,289	2,320	31	1.35%
Polk County Totals*	**182,262**	**210,184**	27,922	15.32%

Source: U.S. Bureau of the Census, 2010 and 2020 Decennial Census; Housing statistics are for entire incorporated areas of participating jurisdictions as reported by the U.S. Census Bureau. Polk County total includes housing units in unincorporated parts of the county.

The remaining discussion in this section provides future growth and development information, where available, relative to each participating jurisdiction.

3.2.4.1 ALLEMAN

The City of Alleman has not had significant residential growth for about five years. With the growth of North Polk Schools the City is hopeful that growth both commercial and residential may occur but the City is well aware it's borders are land locked by family owned Century Farms.

3.2.4.2 ALTOONA

Between 2010 and 2020 the population of Altoona grew by nearly 35%. In 2014, Altoona's Comprehensive Plan suggested a 3.46% growth rate in forecasting a 2035 population of 33,693. If extended to 2050, the forecast population reaches 56,044. Commercial and Industrial growth has been strong in Altoona. In 2014, it was anticipated that approximately 700 acres of commercial and industrial ground would be needed to satisfy the growth of these land uses in the community through 2035. Today, commercial and industrial land development includes approximately 1,856 acres of improved land with 637 acres of that occurring since 2014. Altoona currently has approximately 414 acres of vacant commercial and industrial land. Figure 11. Altoona Zoning Map and Figure 12 below provide the Altoona Zoning Map and Altoona Future Land Use Map, respectively.

Figure 11. Altoona Zoning Map

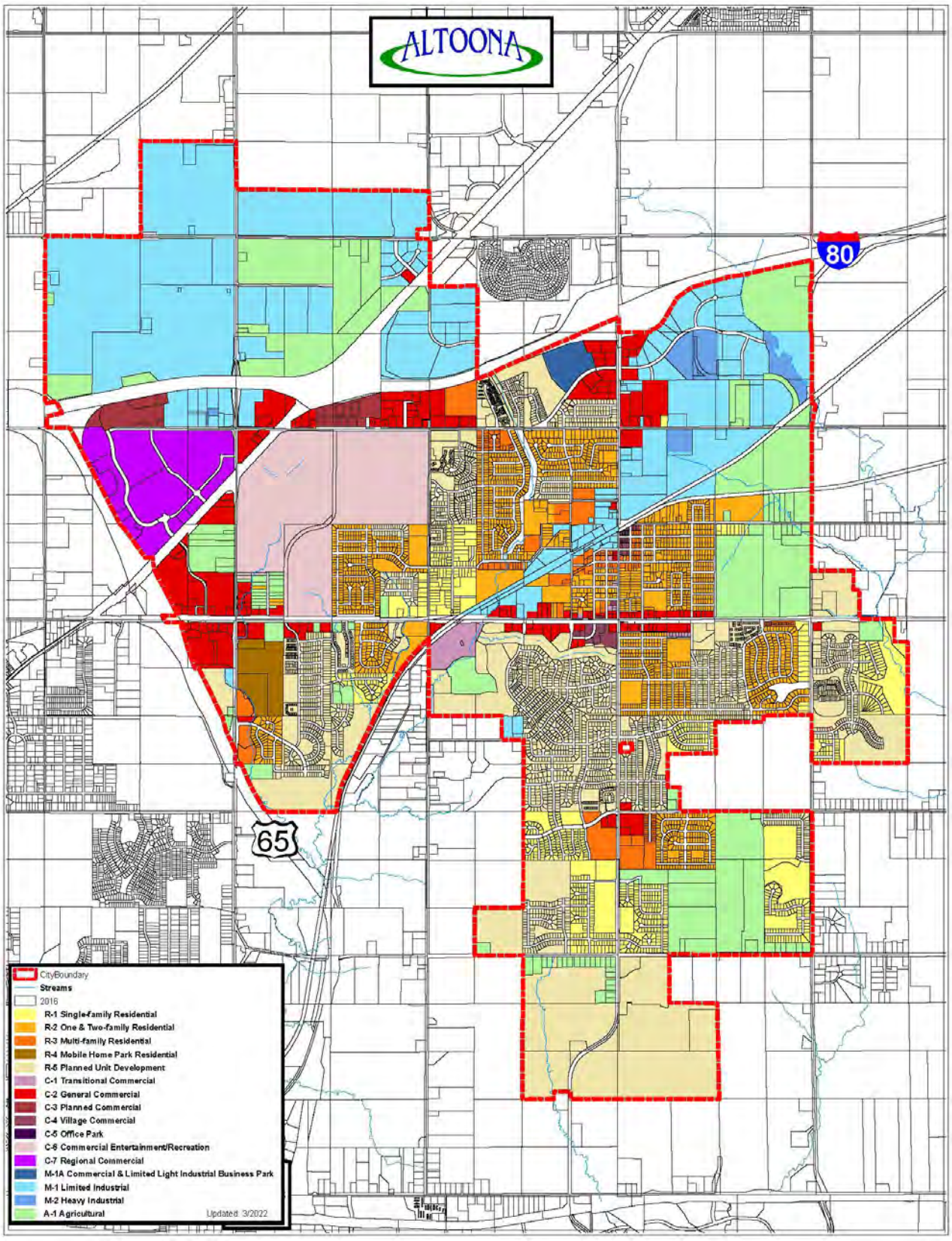
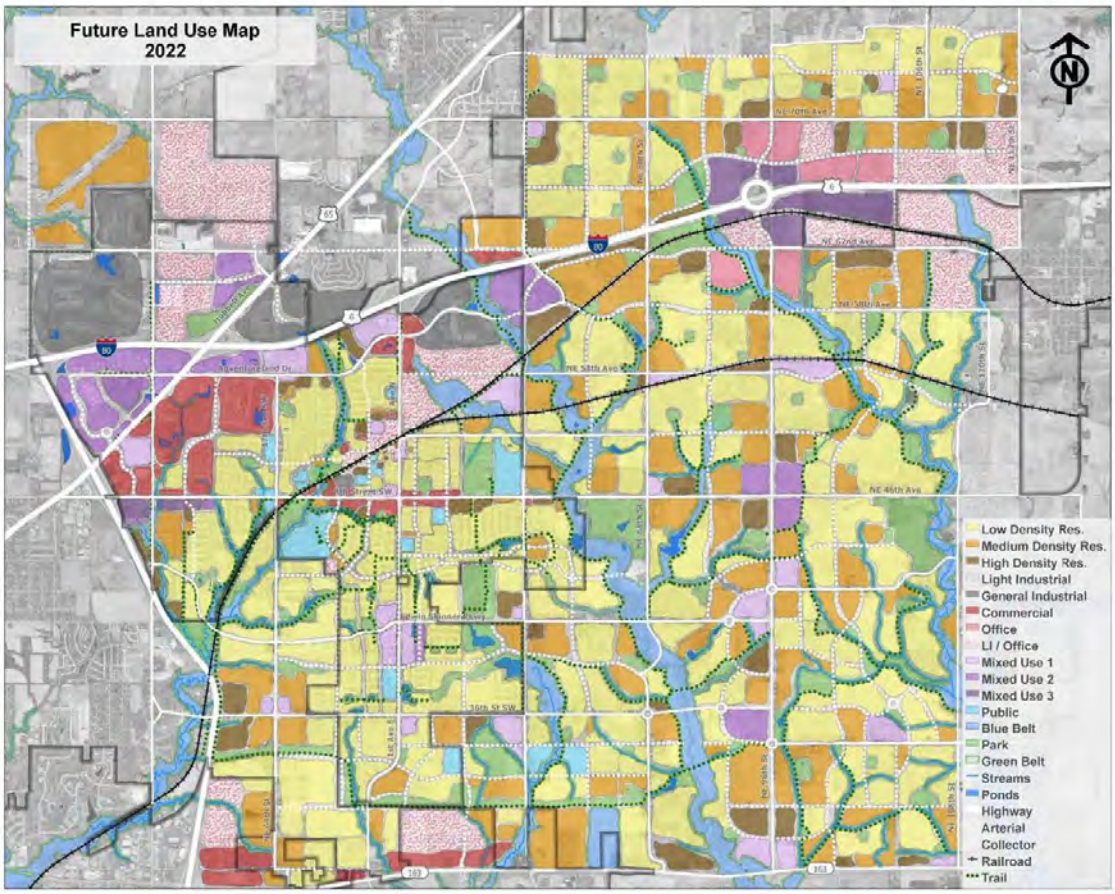


Figure 12. City of Altoona Future Land Use Map



3.2.4.3 ANKENY

The Ankeny Plan 2040 considers existing land use characteristics and projects the amount of land needed to accommodate the City's projected population of 130,000 by the year 2040. While several variables may impact this growth positively or negatively, there are few limits to growth in the Ankeny area, such as generally flat terrain, adequate ability for public infrastructure extension, and significant development opportunities associated with the potential Northeast Beltway expansion.

Based on calculations of population growth, housing demand, and land requirements, it is possible that the City of Ankeny will need between 1,785 acres (2.78 square miles) and 3,871 acres (6.05 square miles) to address this residential demand caused by anticipated population growth. By 2040, this growth will generate a demand for approximately 21,714 dwelling units, or 987 dwelling units annually, between ownership and rental units combined.

With an increase of residential land area needed, the demand for parkland also increases. The Ankeny Plan 2040 recommends upwards of 1000 additional acres of parkland. The growth of the City of

Ankeny may also require up to 339 acres of commercial land area, 330 acres of industrial land area, 134 acres of office land area, and 79 acres of lodging land area. The figures below provide Ankeny's Existing Land Use Map, Future Growth Areas Map, and Generalized Development Concept Map.

Figure 13. Ankeny Existing Land Use Map

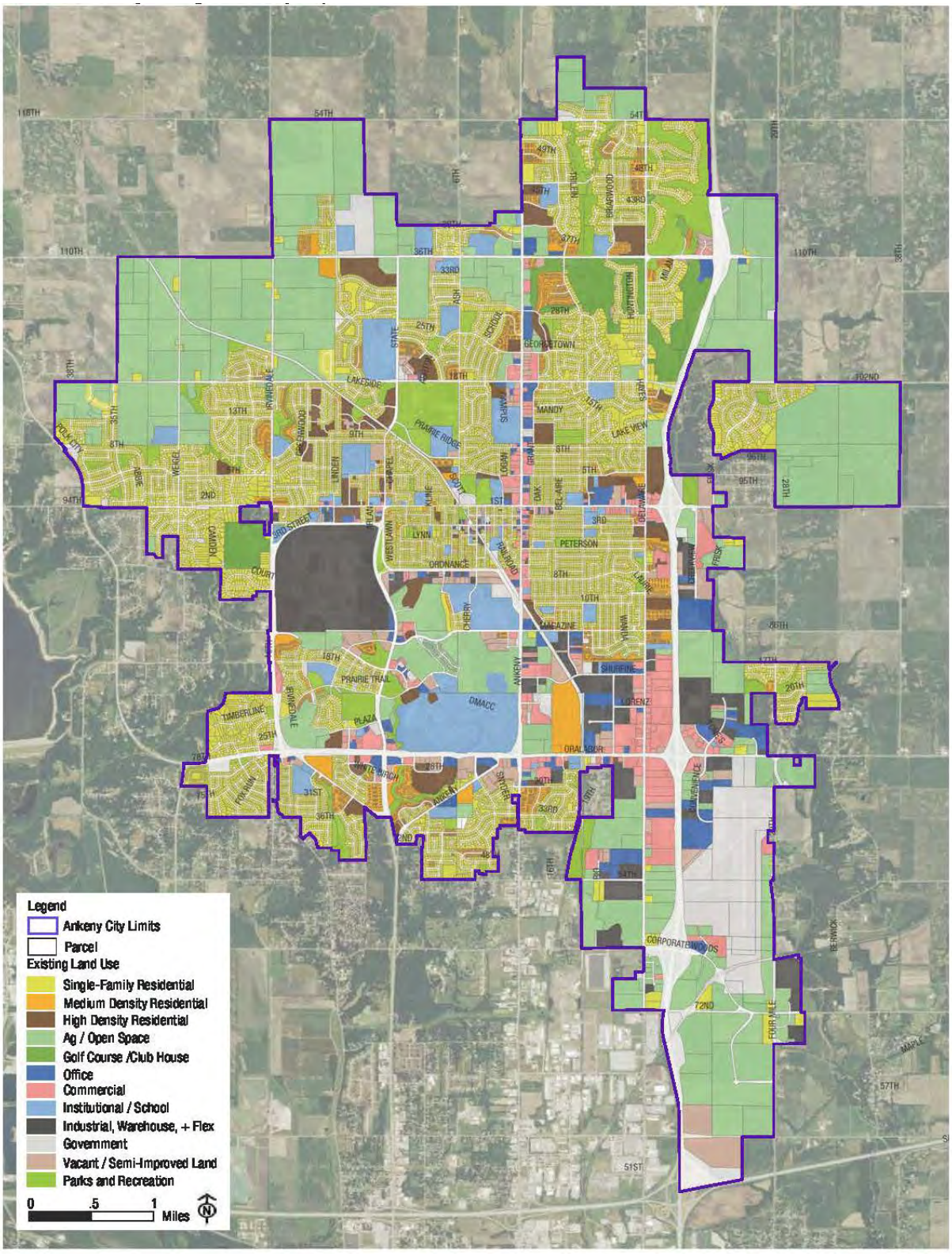


Figure 14. Ankeny Future Land Use Map

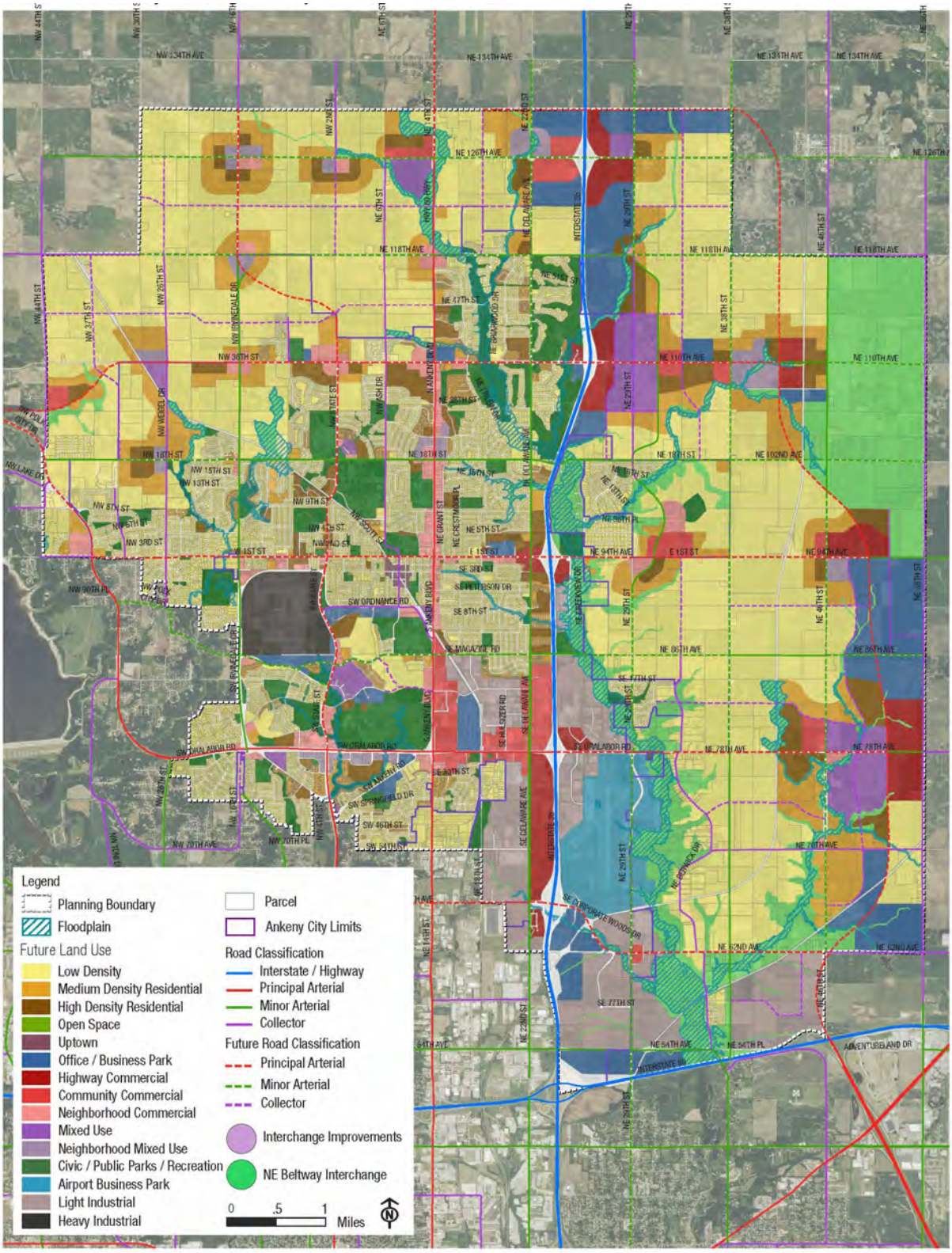
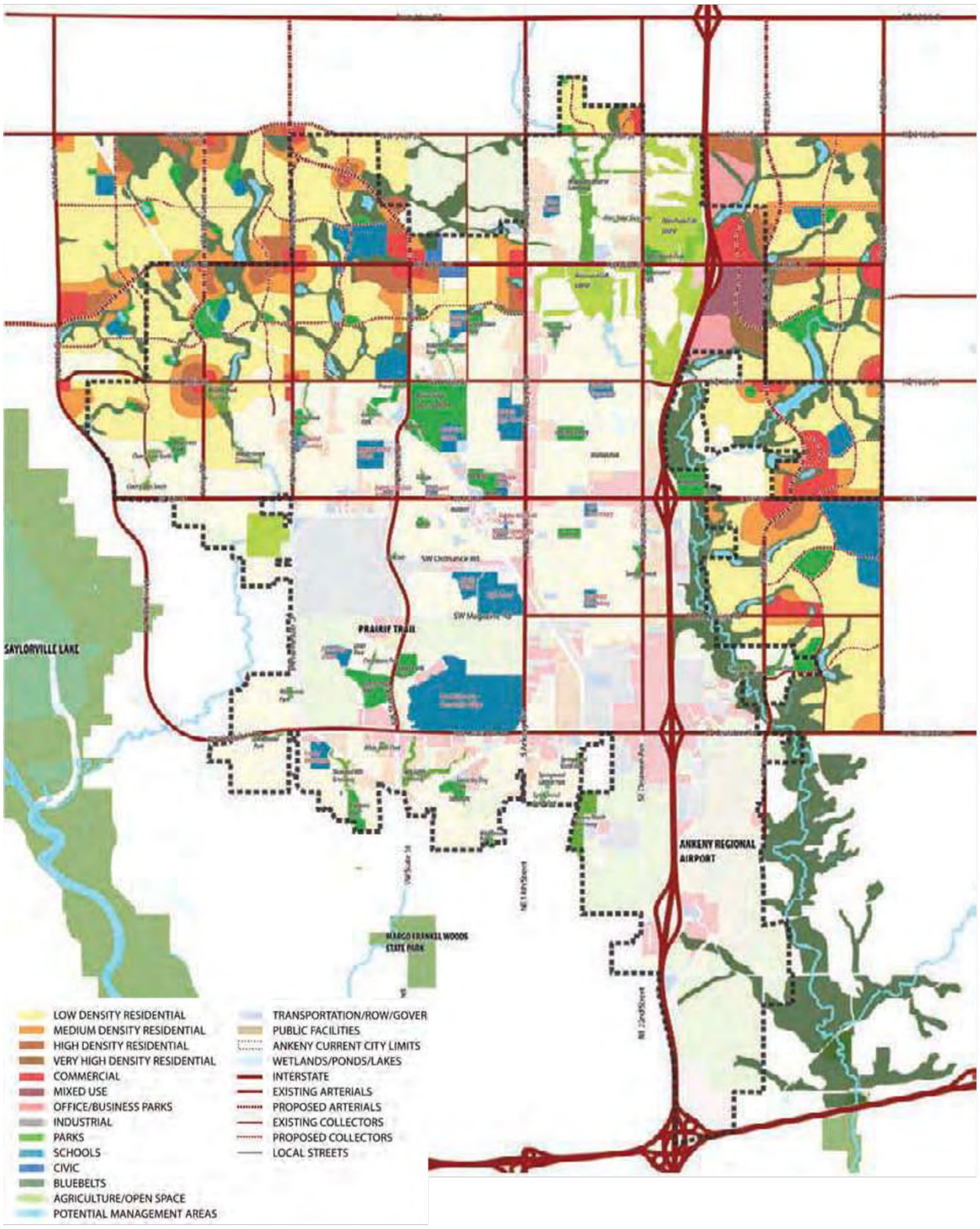


Figure 15. Ankeny Generalized Development Concept Map



3.2.4.4 BONDURANT

The 2020 Census placed the community's population at 7,365 people. Between 2010 and 2020, the community saw a 91% increase in population, which was the second highest percent change in the state and the highest percent increase in Polk County. The City of Bondurant will be conducting a Special Census in 2024 to capture ongoing growth that has occurred since the 2020 Census. Given the sustained growth the community has been experiencing, community leaders feel the population will likely trend between 22,798 and 32,396 through 2050.

In addition to ongoing residential growth, the community has been experiencing rapid commercial and industrial development. Over 4,000 jobs have been created in Bondurant since 2019; a key contributor to this job growth has been Amazon. There are two Amazon facilities located in Bondurant – 500 32nd Street SW and 2300 Shiloh Rose Parkway SW.

Alongside the Building Bondurant Comprehensive Plan, the City of Bondurant has adopted a number of area-specific long-range planning documents, including the following:

- **Civic Campus Master Plan:** this plan provides guidance on how a series of public buildings can be constructed on the 46-acre Civic Campus site over a series of decades to meet both current and future demands of the City. The first building that will be constructed in the Civic Campus Master Plan area will be the new Bondurant Emergency Services Facility.
- **Grain District Downtown Redevelopment Plan:** This plan provides the framework for how a 25-acre former farmer's cooperative can be redeveloped in a way that is considered a cohesive extension of the community's downtown core area. This former farmer's cooperative site is host to several groupings of 140'-tall grain elevator structures, some of which may have sustained damage from the 2020 derecho.
- **Central District Stormwater Improvements Master Plan:** This plan provides guidance on how the currently unsafe intersection of Grant Street South and Highway 65 can be reconstructed in a way that will allow for the sufficient stacking of vehicles. This plan also identifies the potential to have a 30+ acre regional stormwater detention basin created to help mitigate existing and potential future flooding concerns of the area.

Figure 16 - Bondurant Existing Land Use

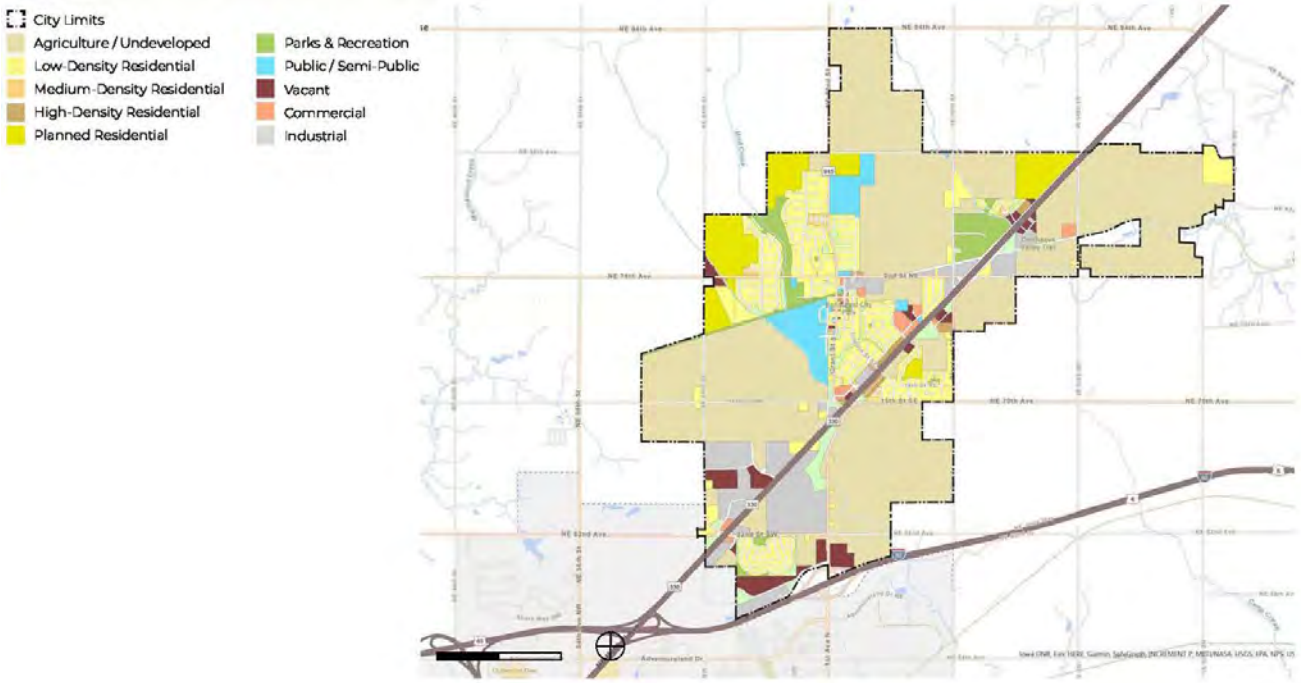


Figure 17. Bondurant Annexation Priority Map

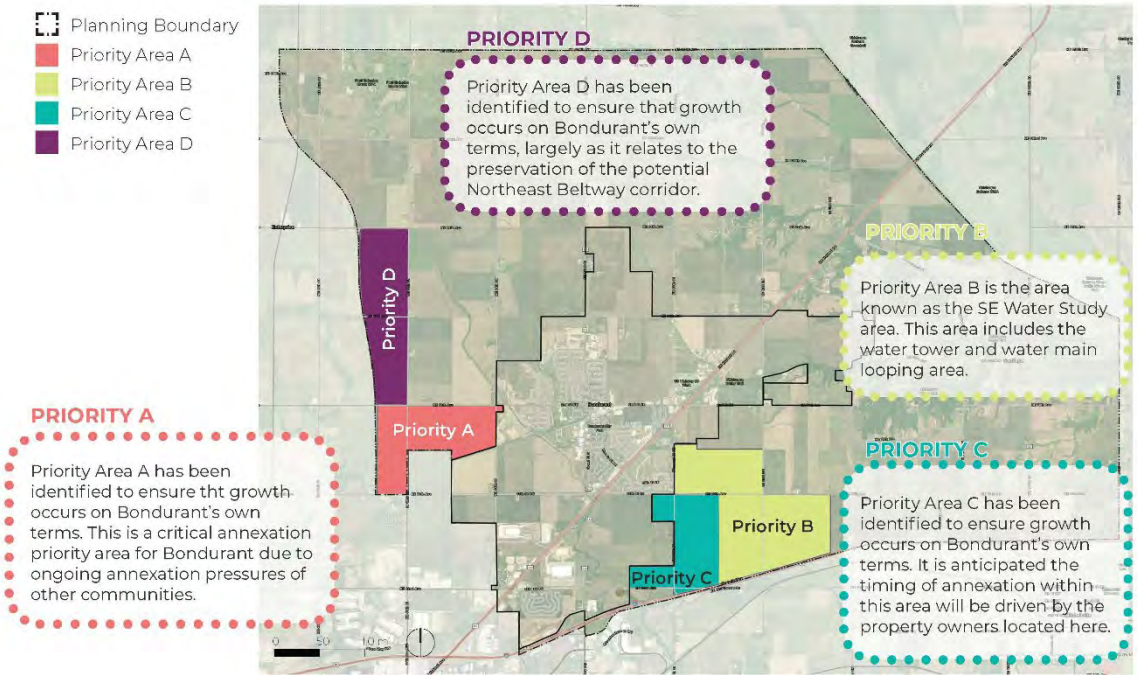
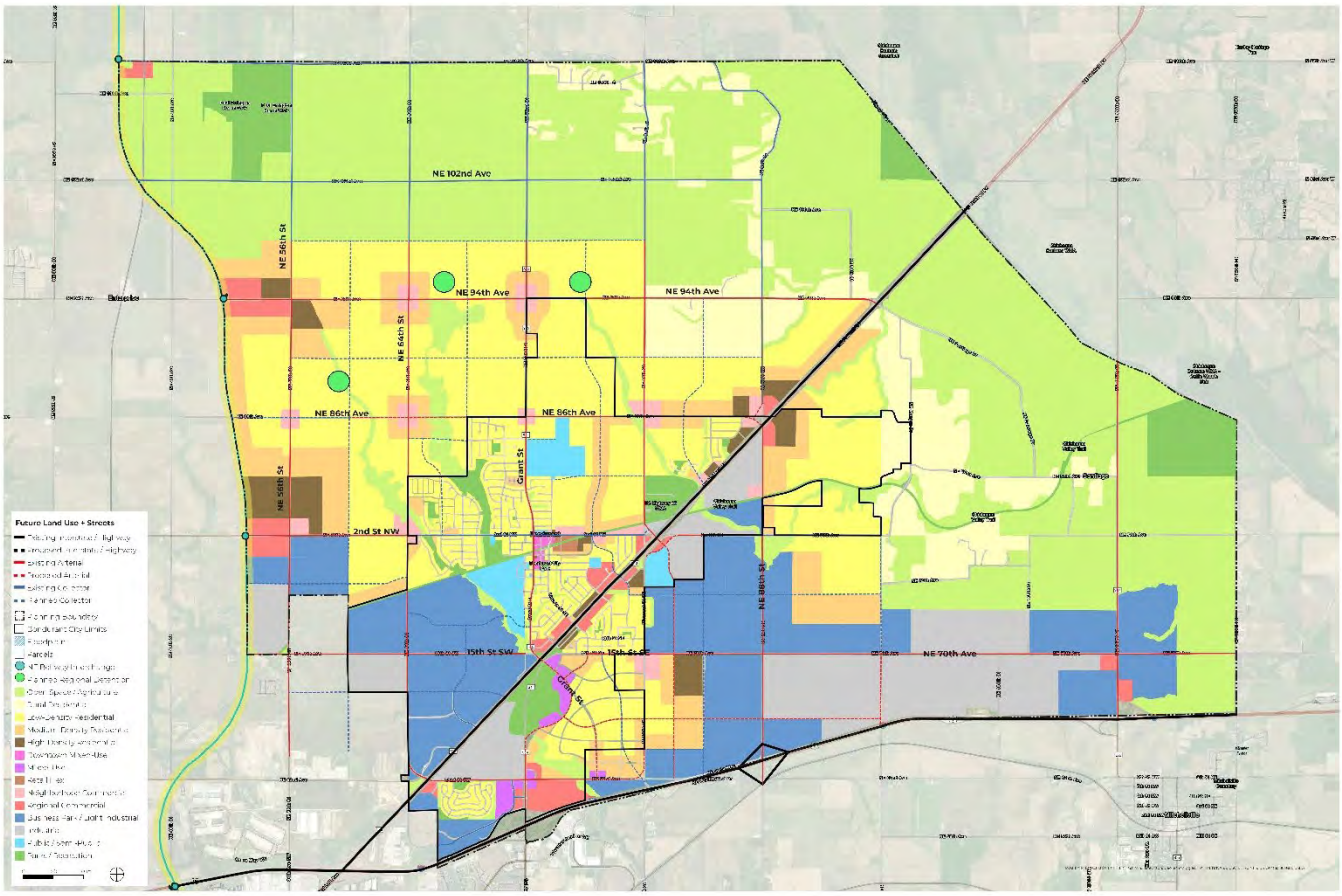


Figure 18. Bondurant Future Land Use Map



3.2.4.5 CLIVE

The City of Clive is a landlocked community nearing full build out. Clive is experiencing growth through greenfield development north of Hickman Road and east of NW 156th Street. The bulk of new development in this area is anticipated to be low density residential, with some opportunity for medium or high density residential. There are limited opportunities for neighborhood commercial and mixed use developments. In addition, there are planned extensions of the Clive Greenbelt in the area north of Douglas Parkway.

In addition to greenfield development, there are scattered infill sites throughout the community that provide opportunities for commercial development and some residential projects. Redevelopment opportunities exist primarily east of Interstate 35/80 along the NW 86th Street and Hickman Road Corridors. The Zoning Map and the Future Development Map for the City of Clive are shown in the figures below.

Figure 19. Clive Zoning Map

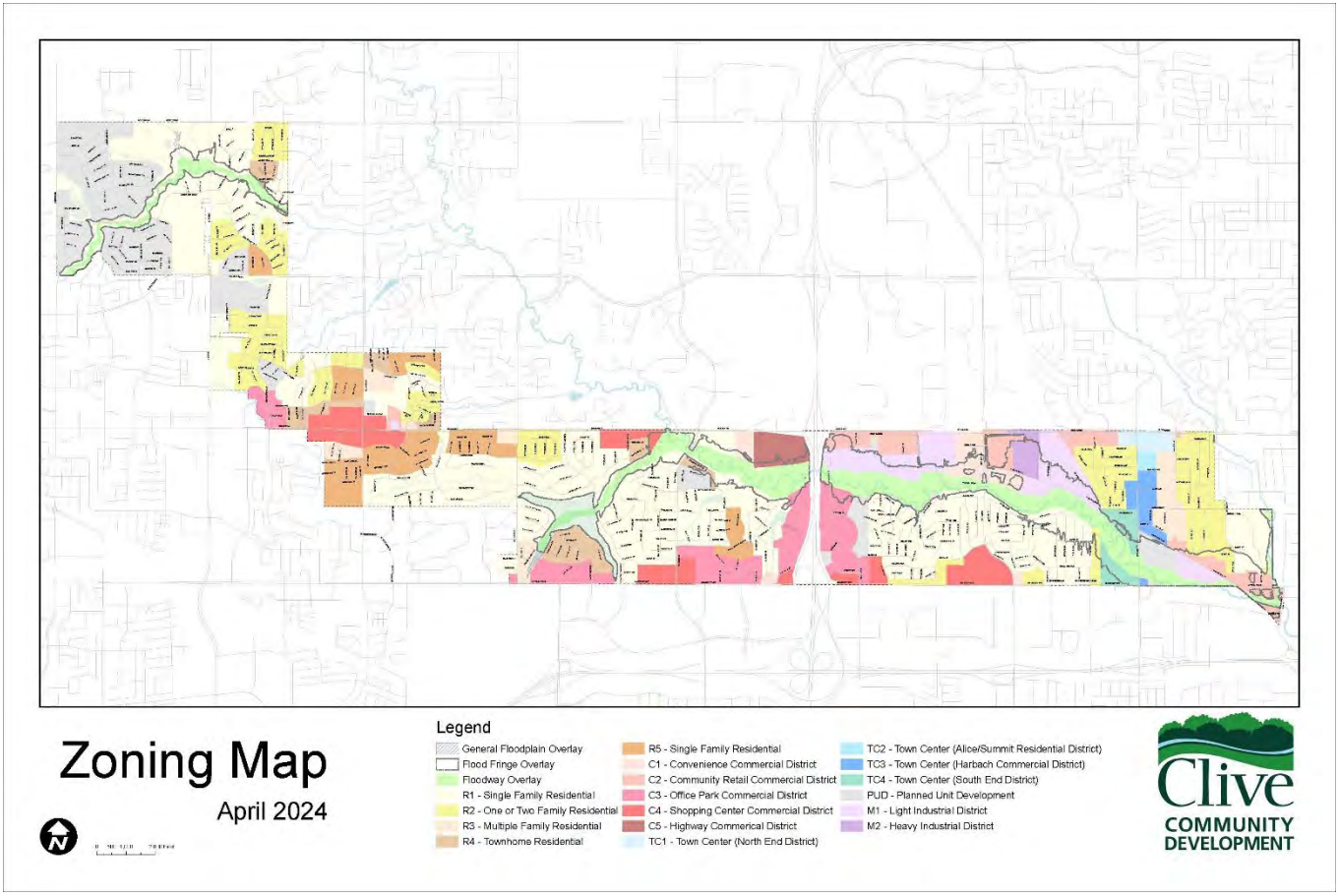
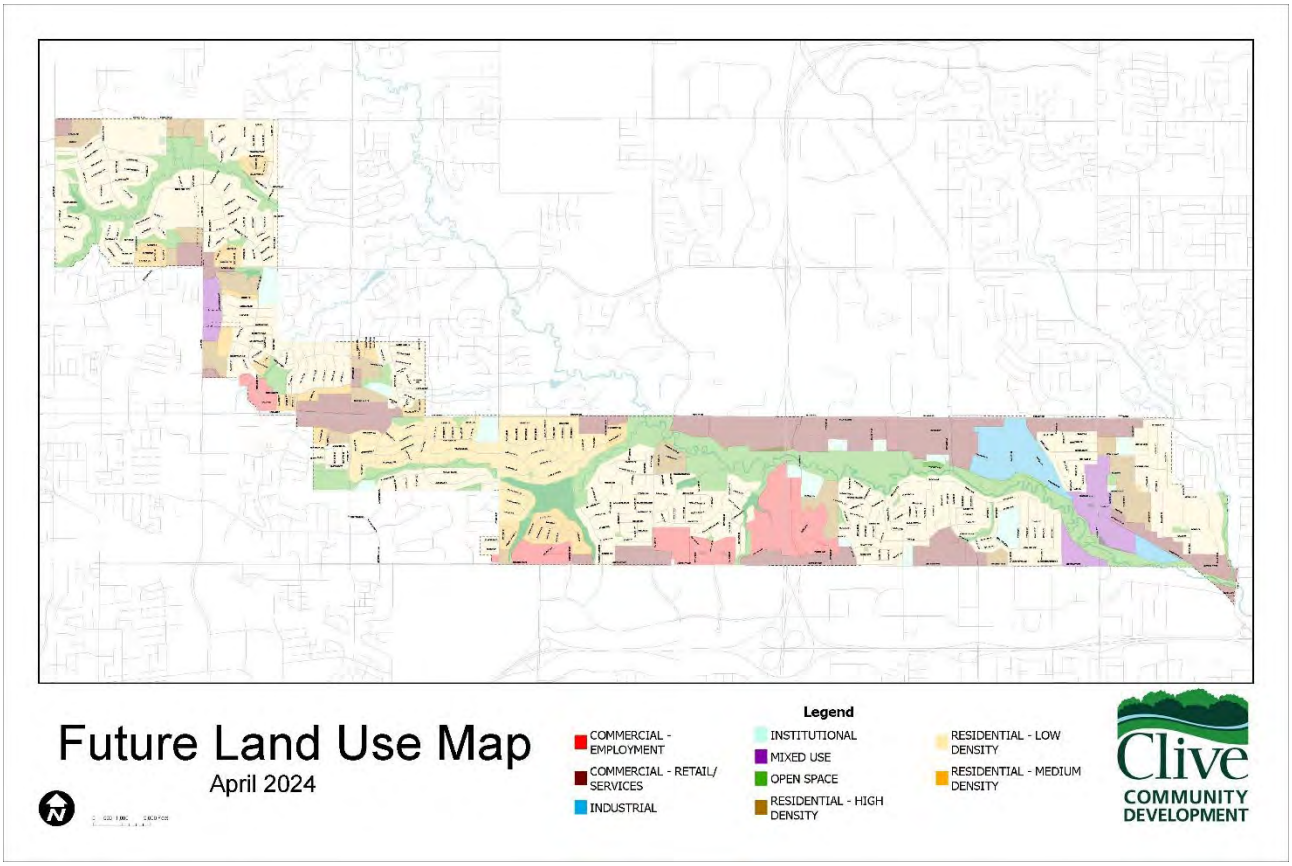


Figure 20. Clive Future Land Use Map



3.2.4.6 DELAWARE TOWNSHIP

There is no anticipated future development in Delaware Township to report at this time.

3.2.4.7 DES MOINES

Des Moines continues to be the economic center of the metropolitan area. It has experienced steady development during the past five years. A great deal of this development has gone into downtown Des Moines, significantly increasing the population density of this area and adding many new accommodations for residents. As a class 5 National Flood Insurance Program Community Rating System community, Des Moines maintains a proactive approach to reduce flood damage risks. The Planning and Zoning Ordinances prioritize durability and sustainable design in planning new development.

Figure 21. Des Moines Zoning Map

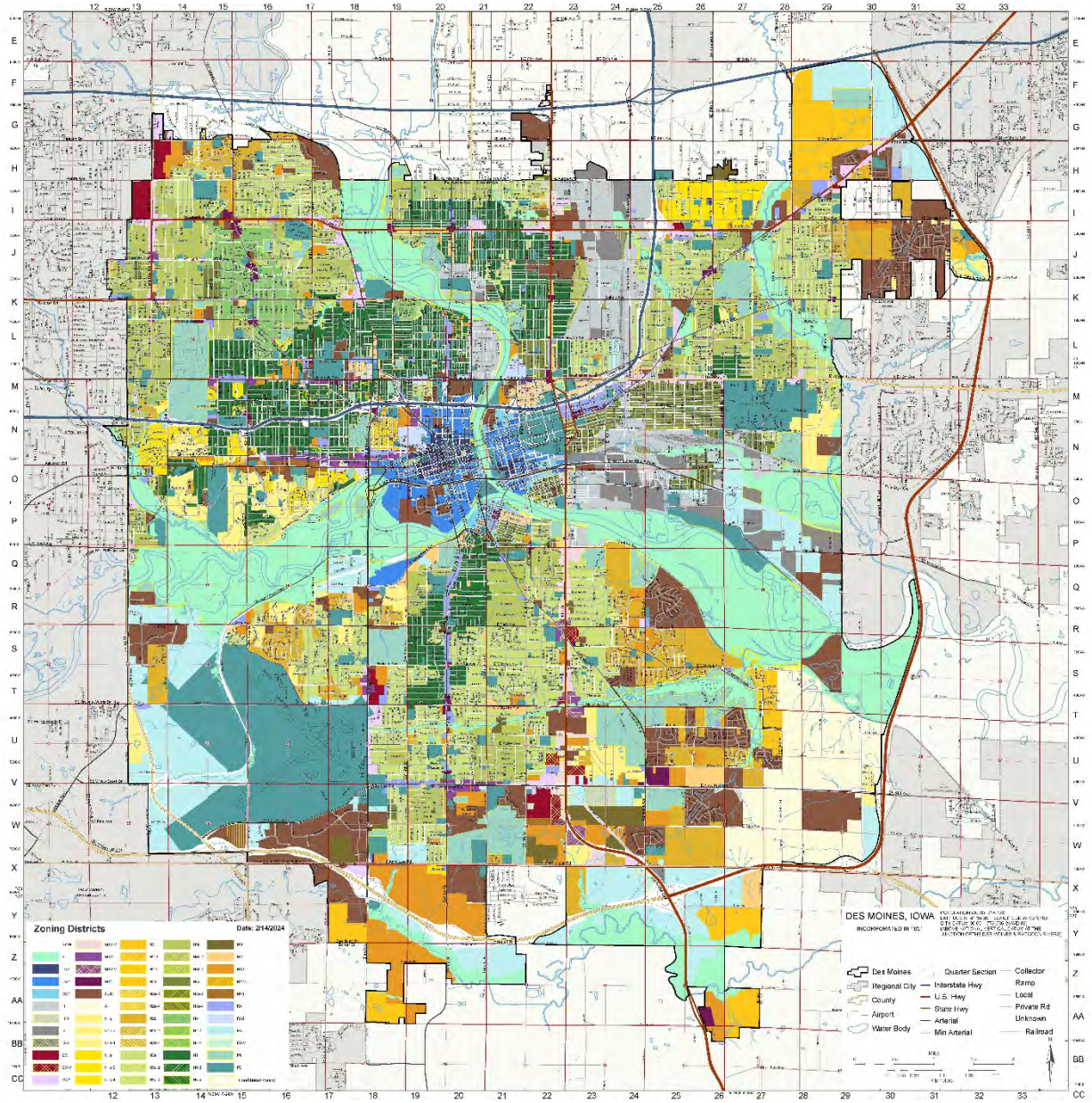
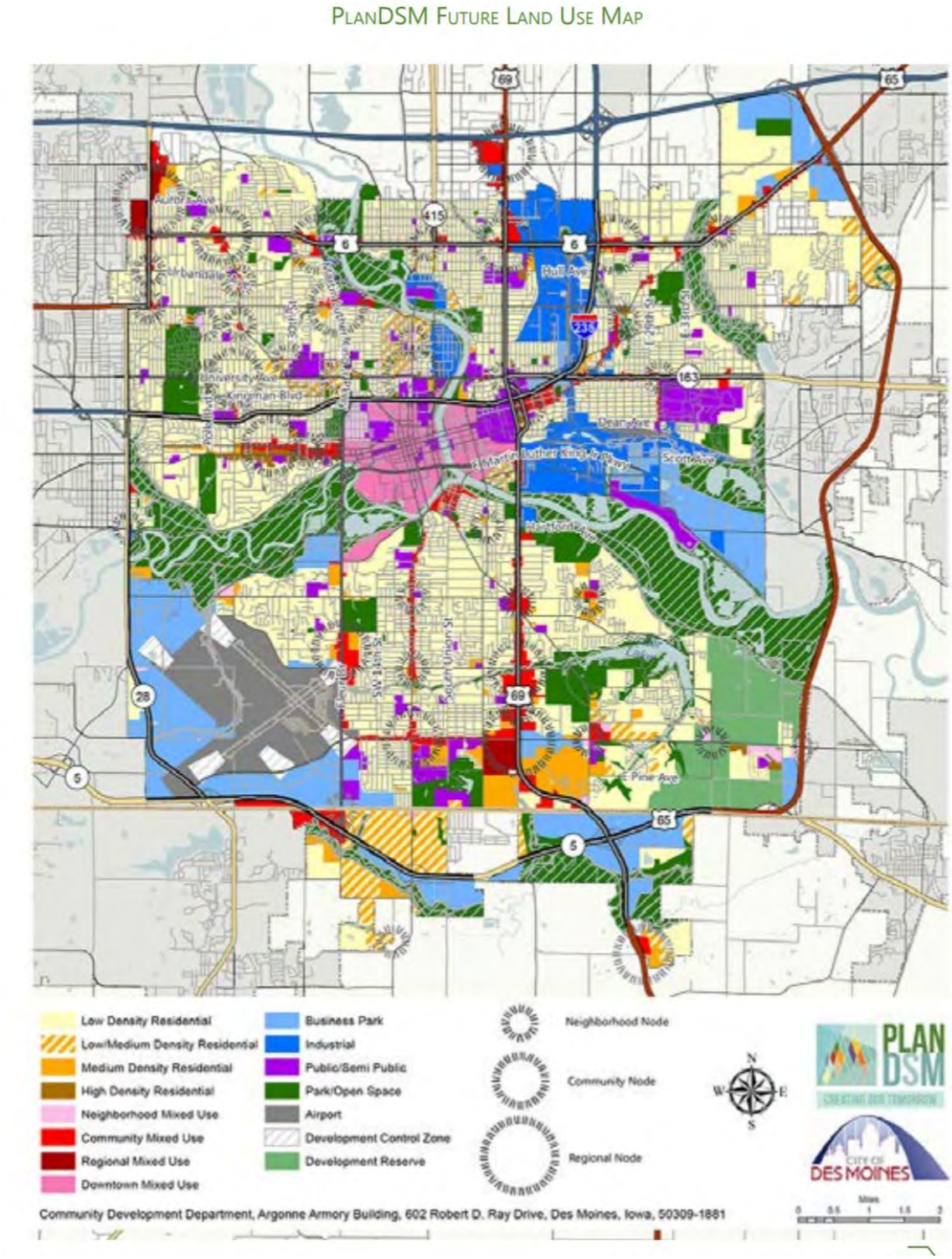


Figure 22 - Des Moines Future Land Use Map



3.2.4.8 ELKHART

The City of Elkhart expects continued growth in East Elkhart Development and in North Elkhart. If proposed beltway is built, growth will occur in South Elkhart. The City is looking into building a new fire station, expanding ball fields and developing a new park in the east side of Elkhart.

3.2.4.9 GRIMES

Grimes has experienced substantial growth in both the residential and commercial areas. Per the Grimes Comprehensive plan, this trend is expected to continue into the foreseeable future. The primary identified potential hazard areas in Grimes pertain to area floodplains. The City has adopted all appropriate flood plain ordinances in accordance with National Flood insurance program protocol in order to mitigate future flood problems.

Figure 23 - Grimes 2010 Existing Land Use

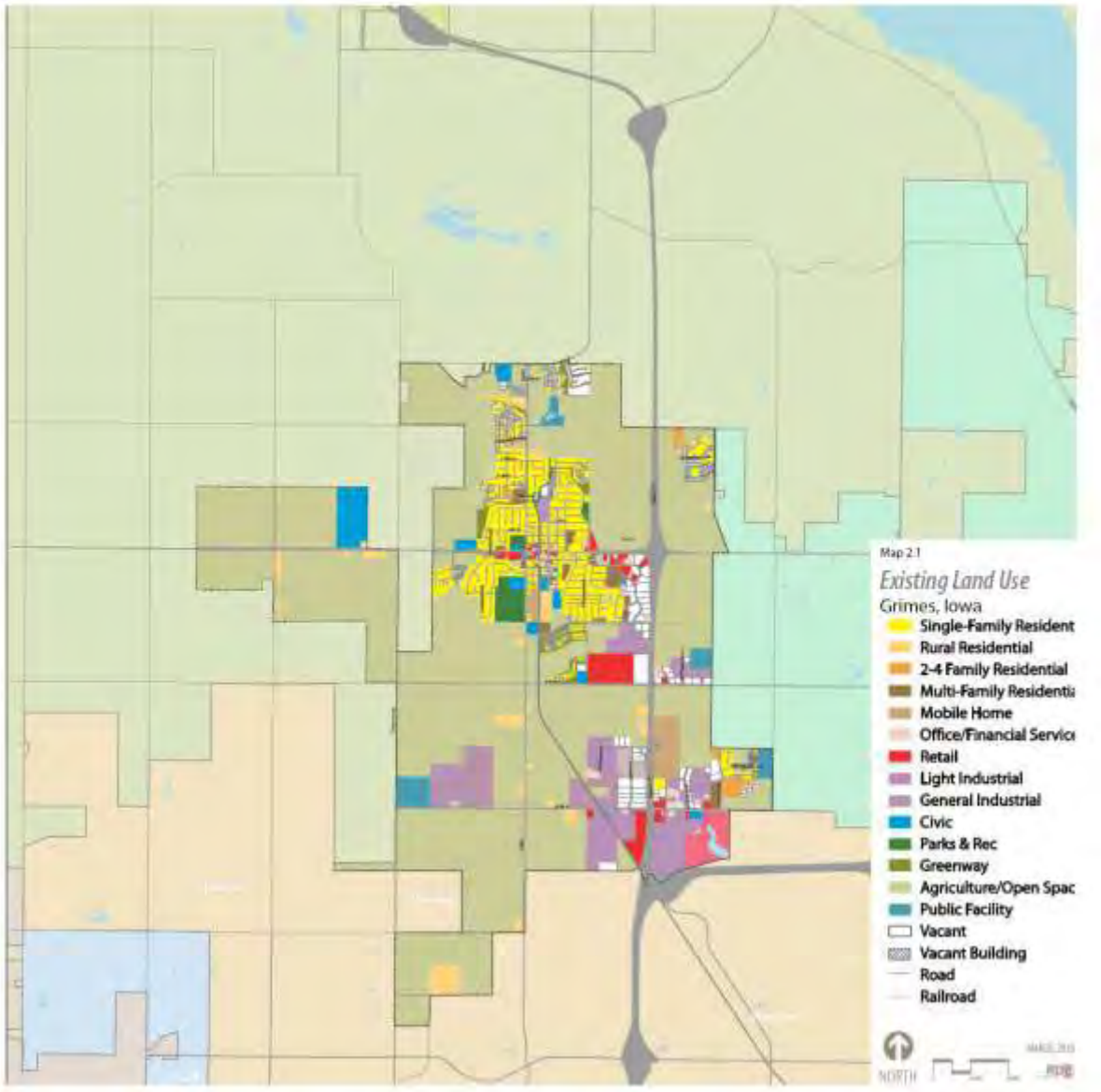


Figure 24 - Grimes Future Land Use

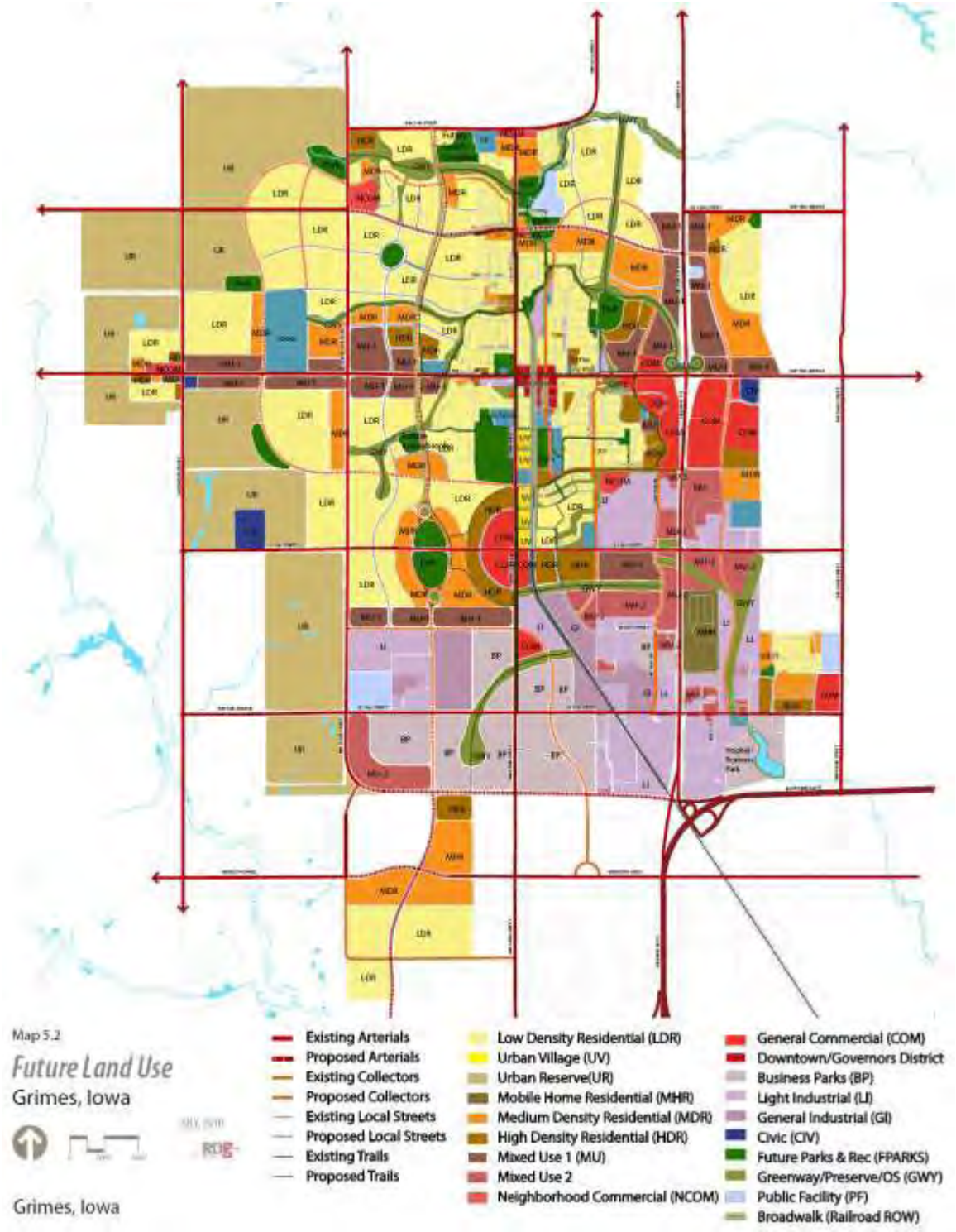


Figure 25 - Grimes Phased Annexation-Proposed



3.2.4.10 JOHNSTON

The City's current land uses are reflected in the current Zoning Map, shown in Figure 26. Pursuant to the Thrive 2040 Comprehensive Plan, the primary growth areas within Johnston include several infill redevelopment areas, primarily along Merle Hay Road, and two growth areas to the northwest of the community, the first being generally west of NW 86th Street and north of NW 70th Avenue and the second being northerly along Highway 141 and Saylorville Drive. A copy of the Thrive 2040 Comprehensive Plan Future Land Use Map is shown in Figure 27. All three of the redevelopment/growth areas include areas which are impacted by floodplain from Beaver Creek and/or Little Beaver Creek. However, the City of Johnston does maintain floodplain overlay zoning districts as well as stream buffer regulations intended to preserve and protect these natural resource areas.

Figure 26. Johnston Zoning Map

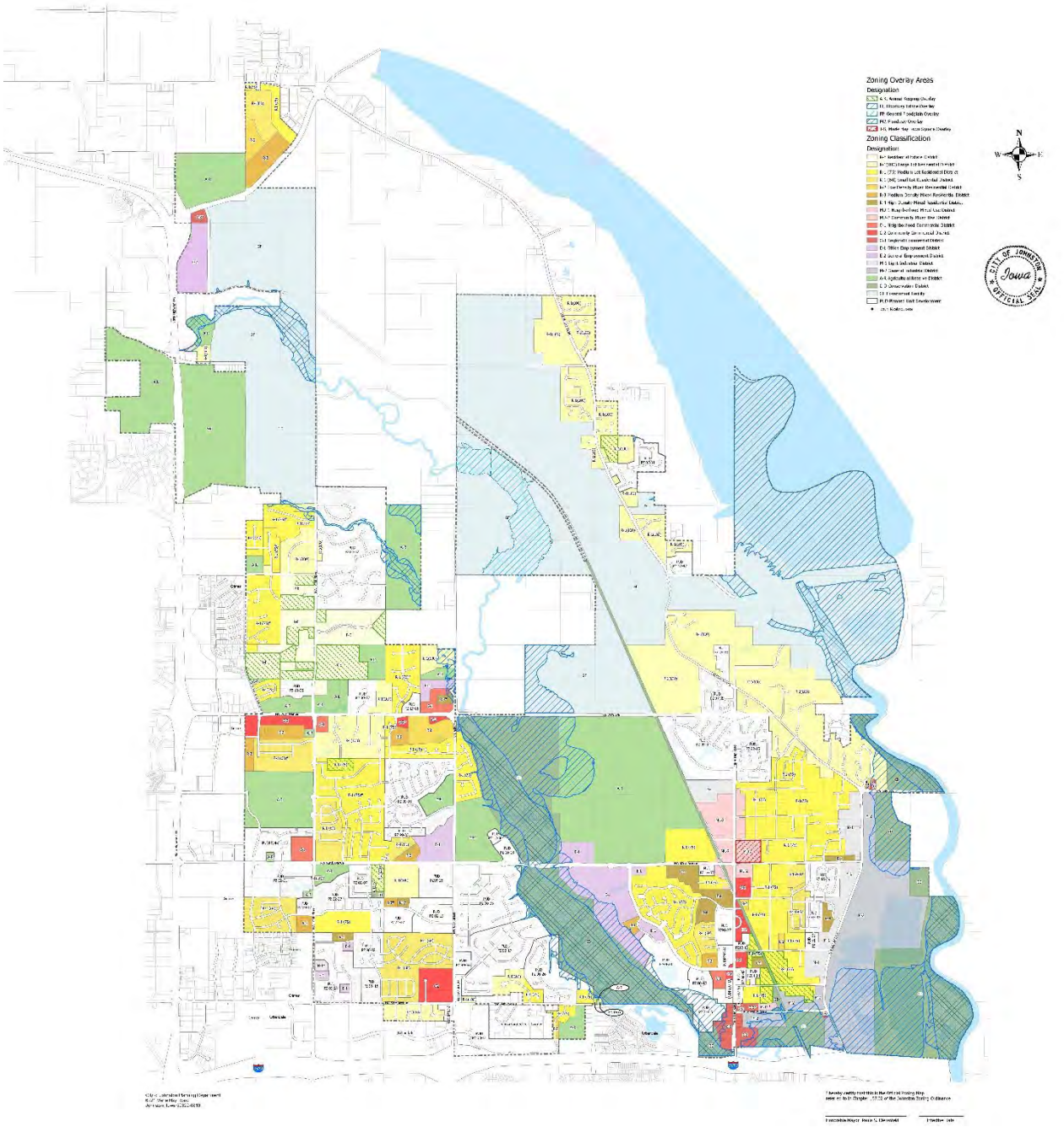
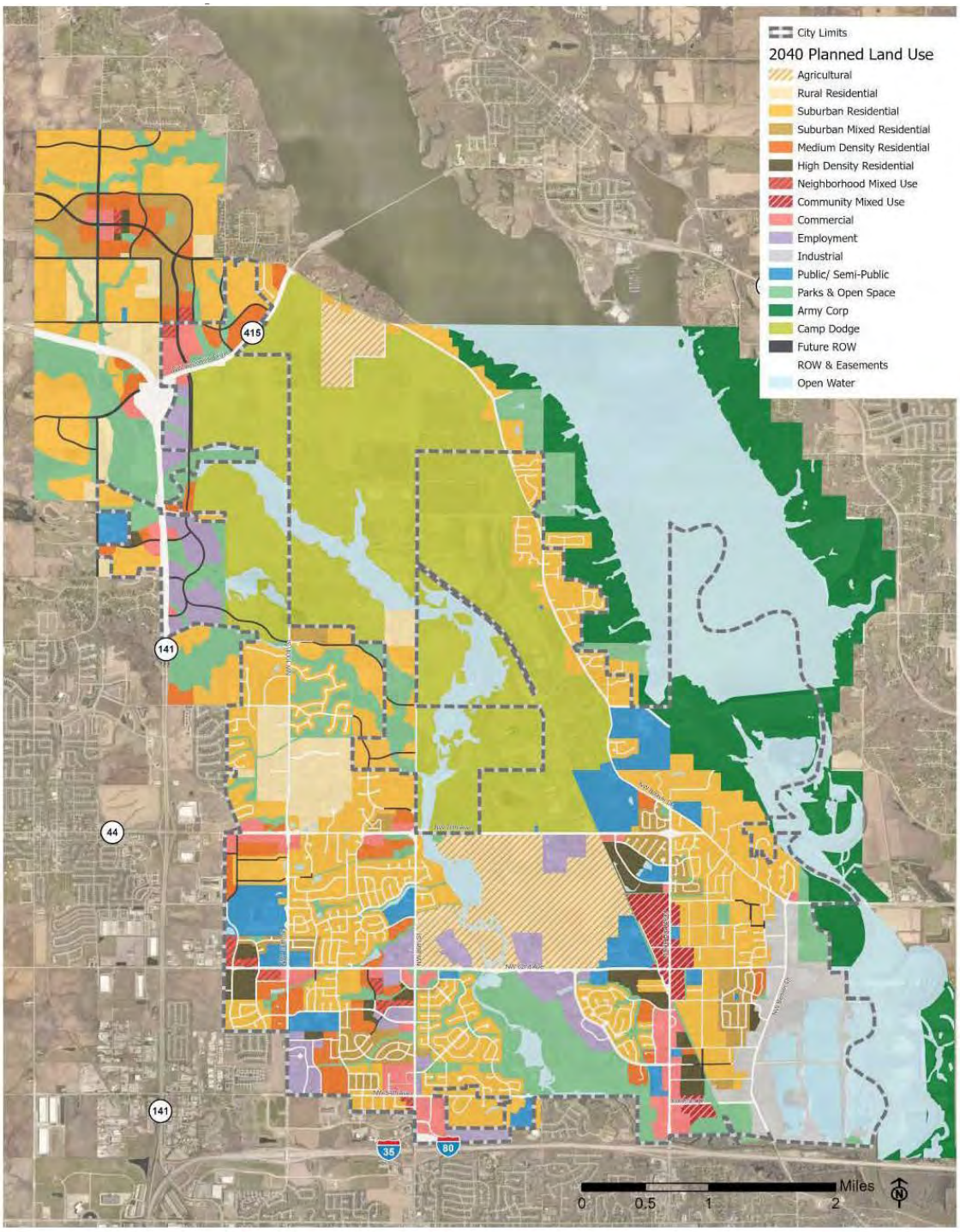


Figure 27. Johnston Future Land Use Map



3.2.4.11 MITCHELLVILLE

The following is excerpted from the 2018 Mitchellville Comprehensive Plan:

The proposed land use map provides Mitchellville with future land uses that will allow the city to be competitive with the surrounding markets and meet the basic needs of the community according to the population projection.

New land should be allocated to the Iowa Correctional Institute for Women in order to allow the city to acquire land that is currently owned by the facility, with the intention of expanding Oak Avenue further south. This will strengthen Mitchellville's infrastructure network and will give the city more control of the development imposed by the Iowa Correctional Institute for Women as it increases its capacity to meet the growing needs of the state. This swap should also provide the city with a necessary connection with the facility to increase the exchange and collaboration between the city and the facility.

The area along the railroad should be zoned and marketed to provide light industrial venues that need interstate and rail access. This increase in light industrial use will increase the city's tax base and provide a much needed increase to the local employer base.

Land along the interstate is best marketed for use as heavy industrial and community commercial because it is an area where high exposure to an interstate network is a high demand for large employers including manufacturing companies, hotels, motels, and distributing companies. The direct access to the railroad is another positive feature to cater to businesses that may need or want this already existing commodity.

A mixed-use area should be created in conjunction with and extended central business district to make the highly traveled Center Avenue a unified business corridor linking and expanding upon the existing business corridor. The mixed-use area can provide a necessary buffer between the proposed area for increased light industrial and community commercial use with the existing residential community. The intent of the mixed-use area is to provide multi-family housing above commercial units. A new high- density residential area is proposed to the south of the new park/ open space in the northeast corner of the city. This area can be used to provide a more densely populated residential area as well as provide a space for a potential retirement home or assisted living community. This is based off its location with the established residential community and also its location relative to parks and open space.

The proposed land use should provide current and future residents with a land use layout that improves upon an already solid recreational, residential, commercial, and industrial base.

Figure 28 - Mitchellville Existing Land Use Map

6. Land Use and Infrastructure

Figure 6.1. Current Mitchellville Zoning Map

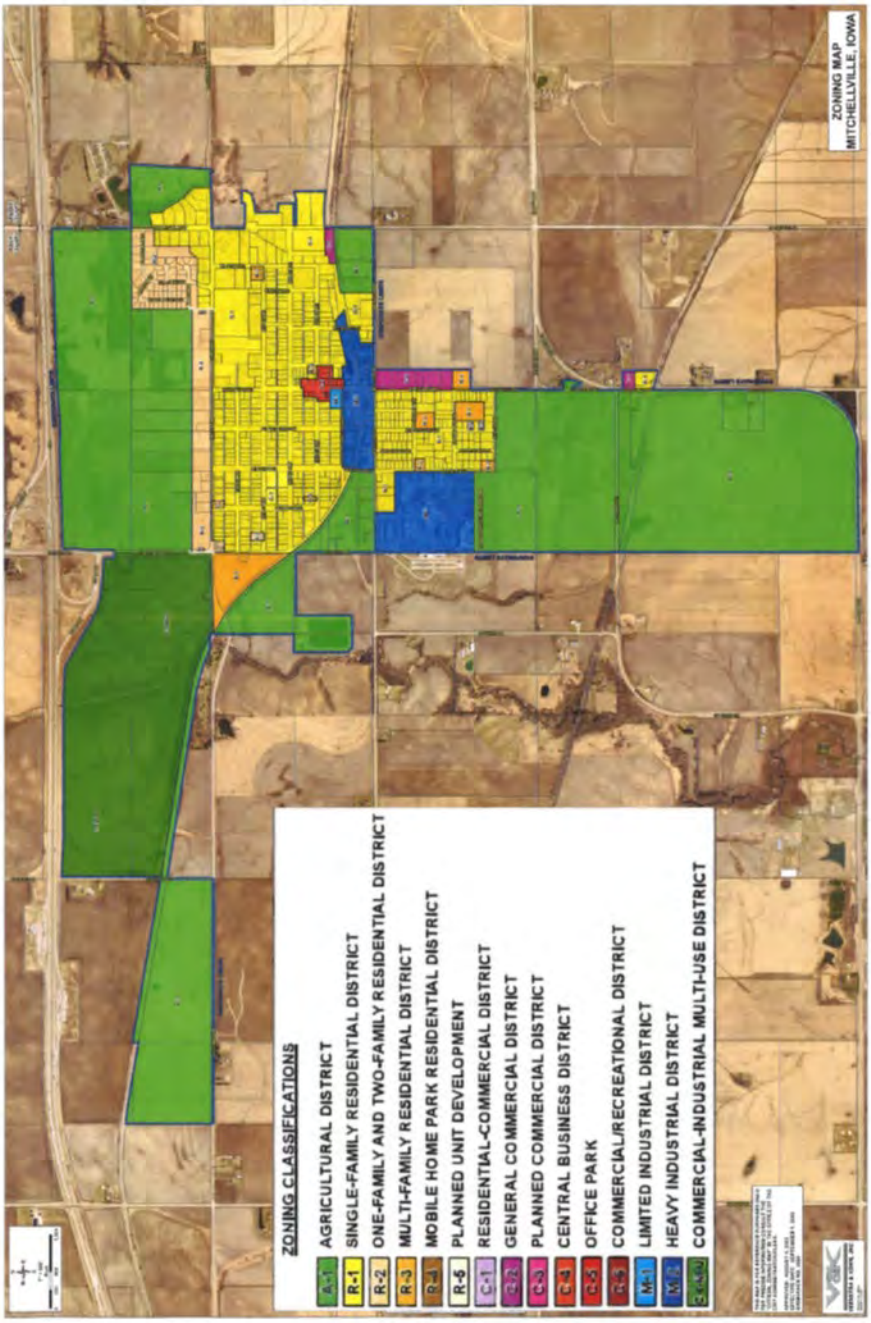


Figure 29 - Mitchellville Future Land Use Map

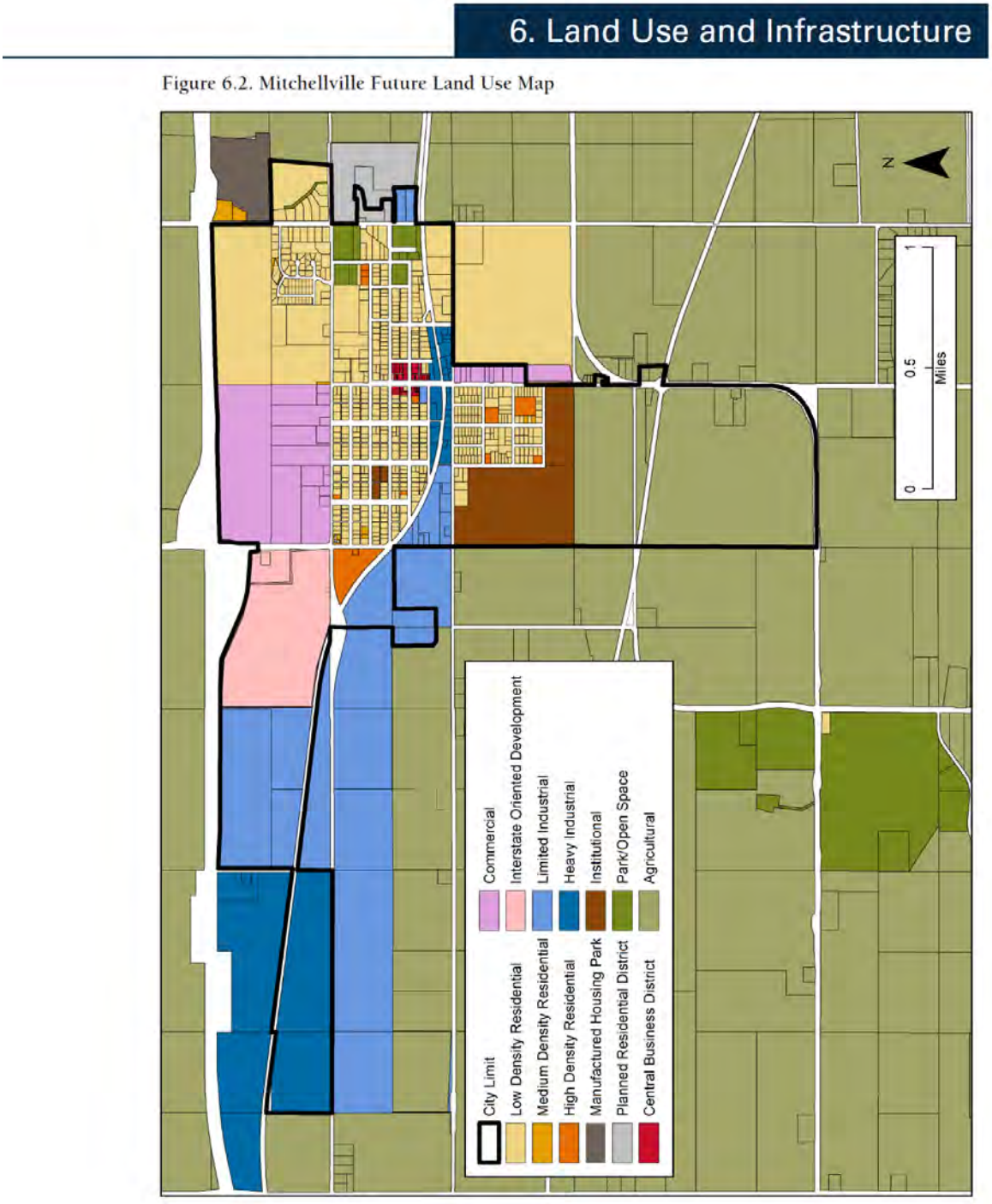
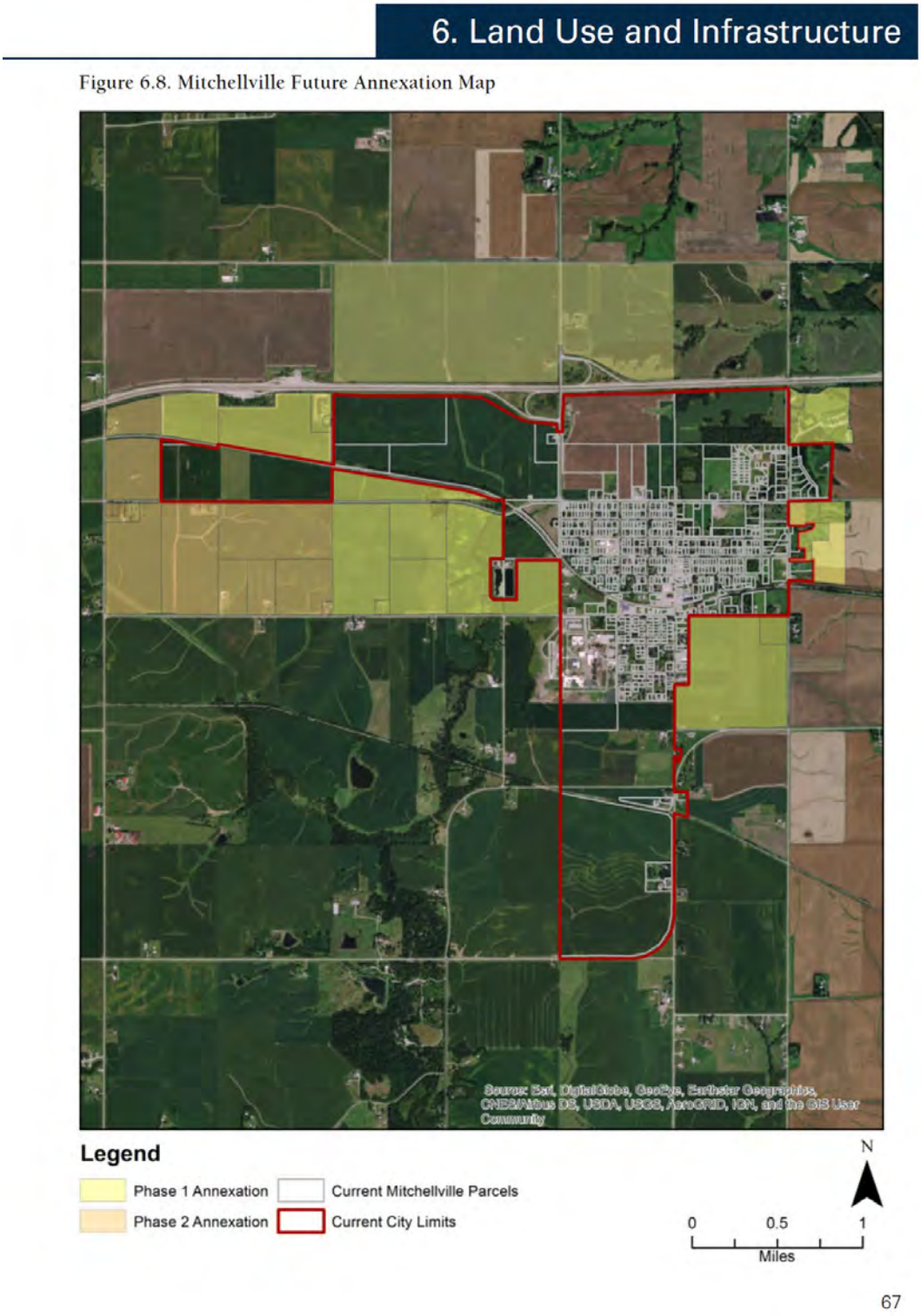


Figure 30 - Mitchellville Future Annexation Map

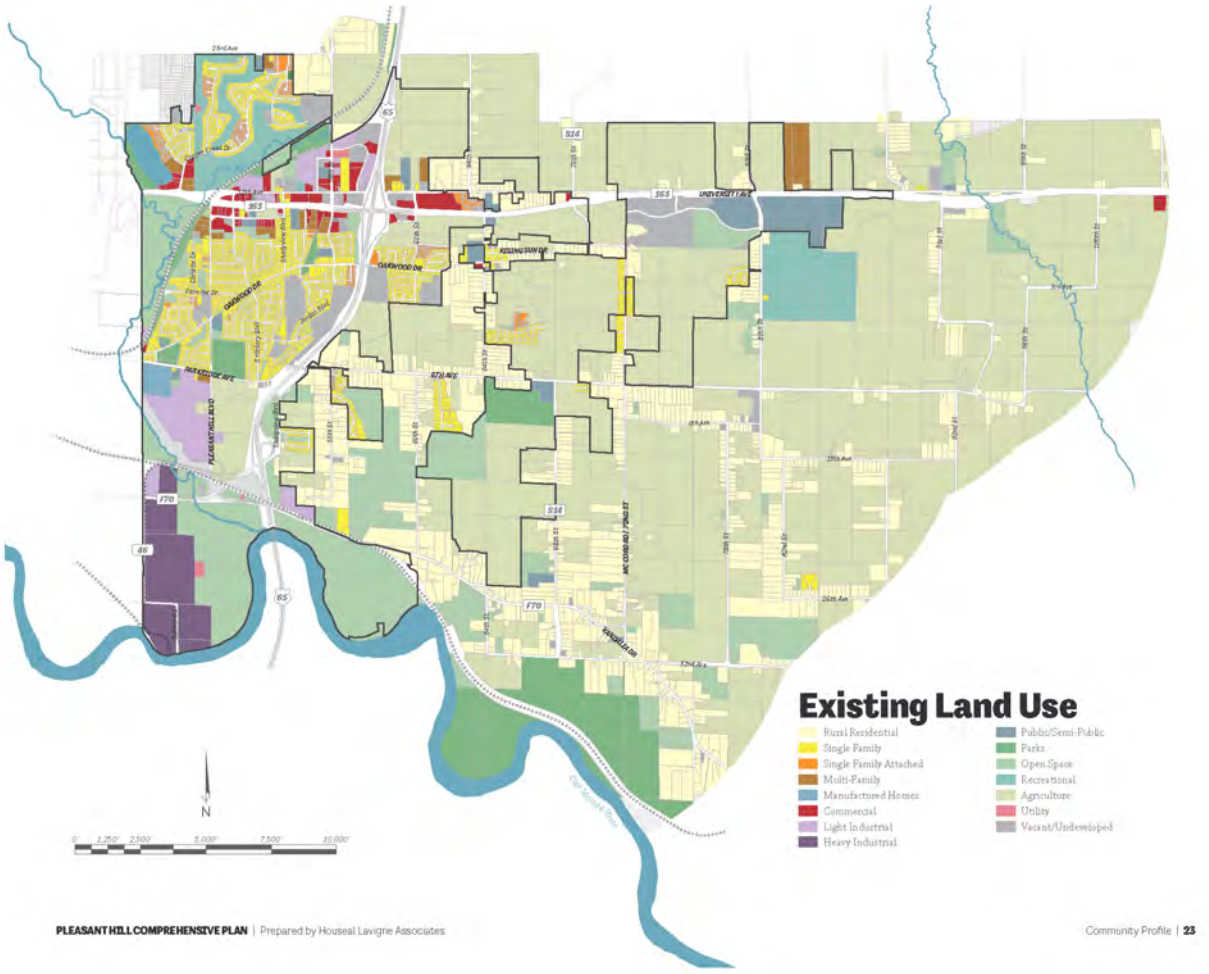


3.2.4.12 PLEASANT HILL

The City continues to see steady growth in residential, commercial, and industrial uses. The majority of land available for development exists east of the Highway 65 bypass towards the Southeast Polk Junior High/High School Complex while also balancing some infill projects, focusing on the development of the University Avenue Corridor throughout the community.

The 2015 Comprehensive Plan outlines the plan and strategies for future development of the City of Pleasant Hill.

Figure 31 - Pleasant Hill Existing Land Use Map



Source: 2015 Pleasant Hill Comprehensive Plan

Figure 32 - Pleasant Hill Current Zoning Map

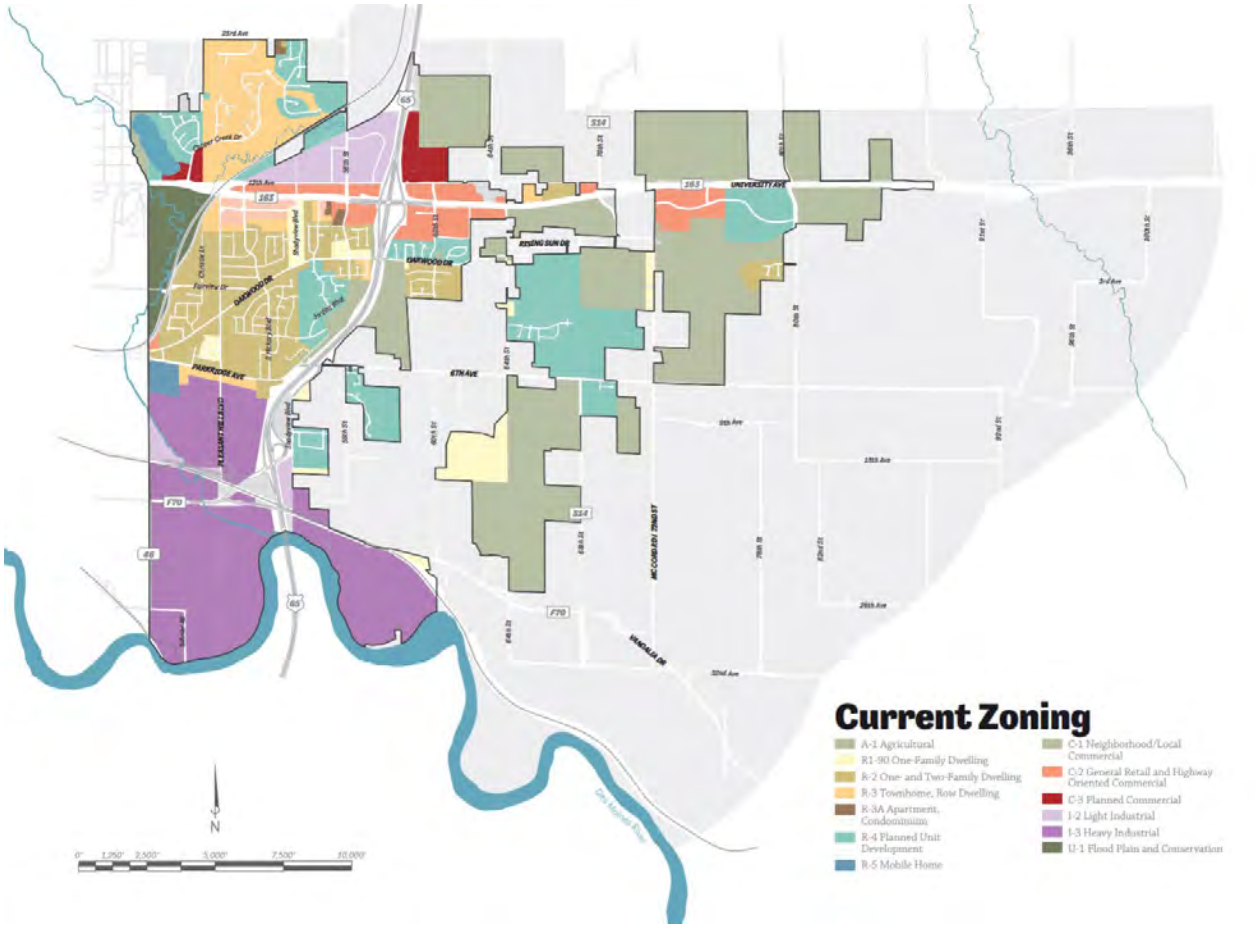
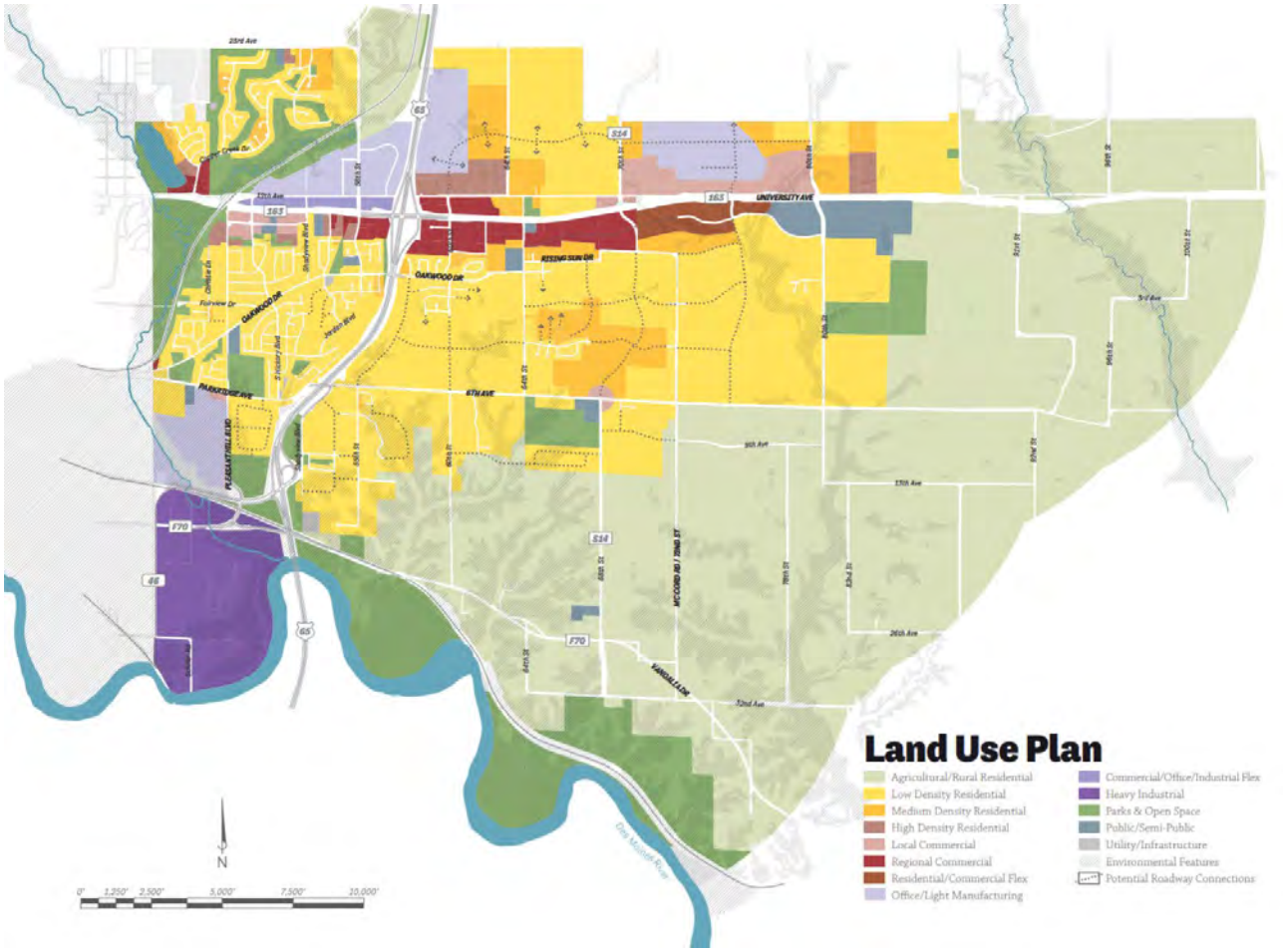
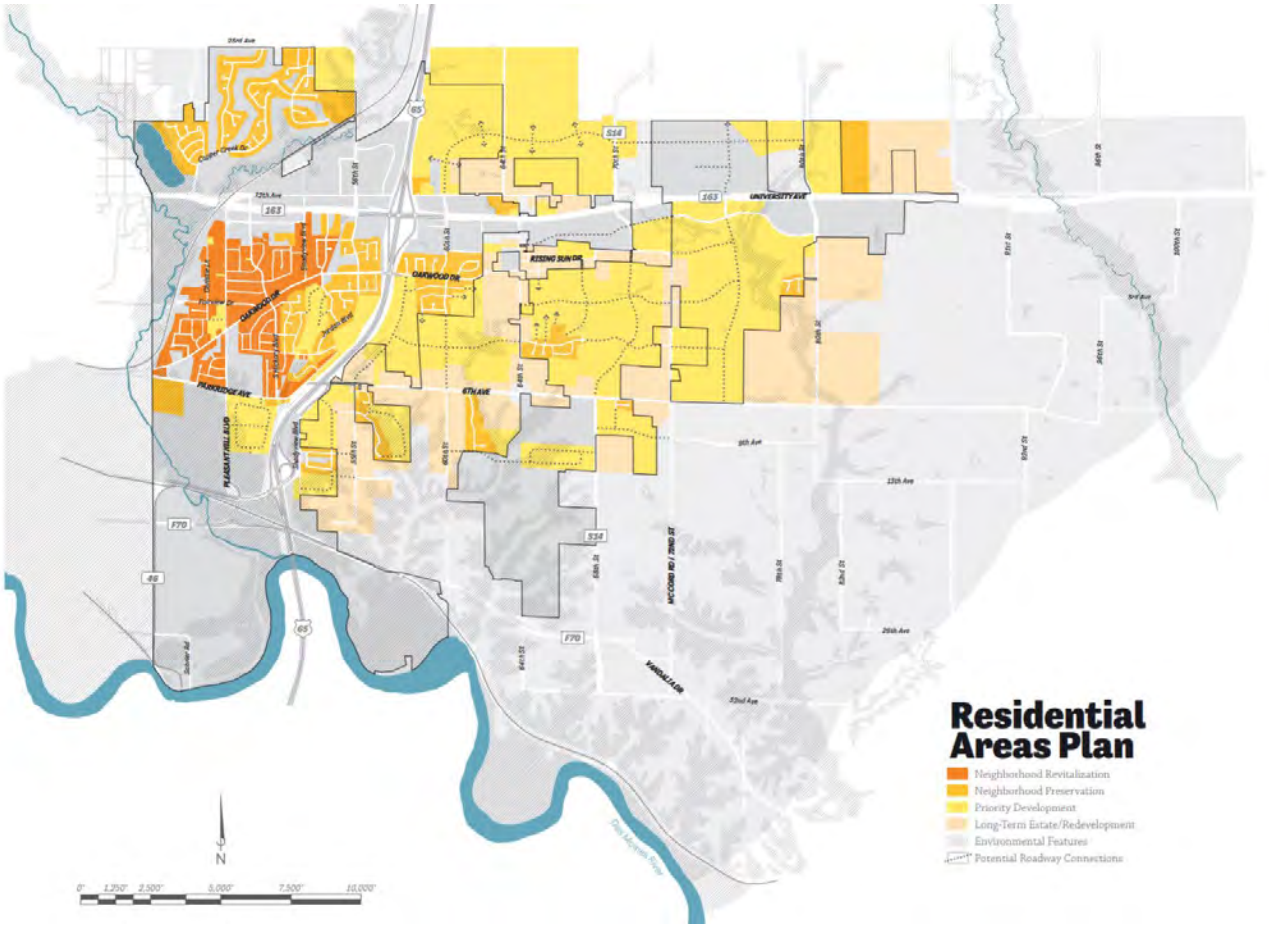


Figure 33 - Pleasant Hill Land Use Plan



Source: 2015 Pleasant Hill Comprehensive Plan

Figure 34 - Pleasant Hill Residential Plan



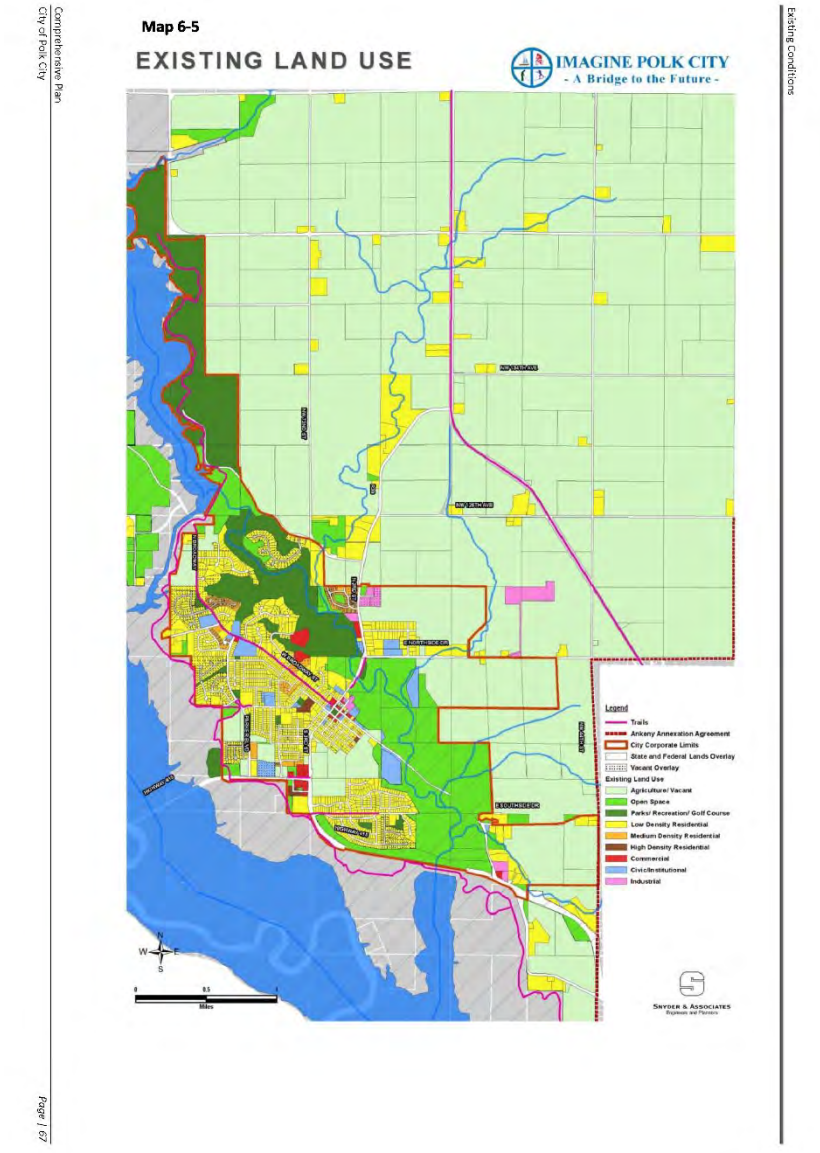
Source: 2015 Pleasant Hill Comprehensive Plan

The following statement discouraging development in flood hazard areas is excerpted from the Pleasant Hill 2015 Comprehensive Plan.

> This land use area accommodates the existing flood hazard areas along the Des Moines River which runs east along Pleasant Hill. This area protects land surrounding these areas while preserving the natural environment. Urban Development in this area is highly discouraged, although it is possible through standards set by the Federal Emergency Management Agency. Uses, if located in the best areas that would lessen the impact upon the area include; existing and future city parks and trails.

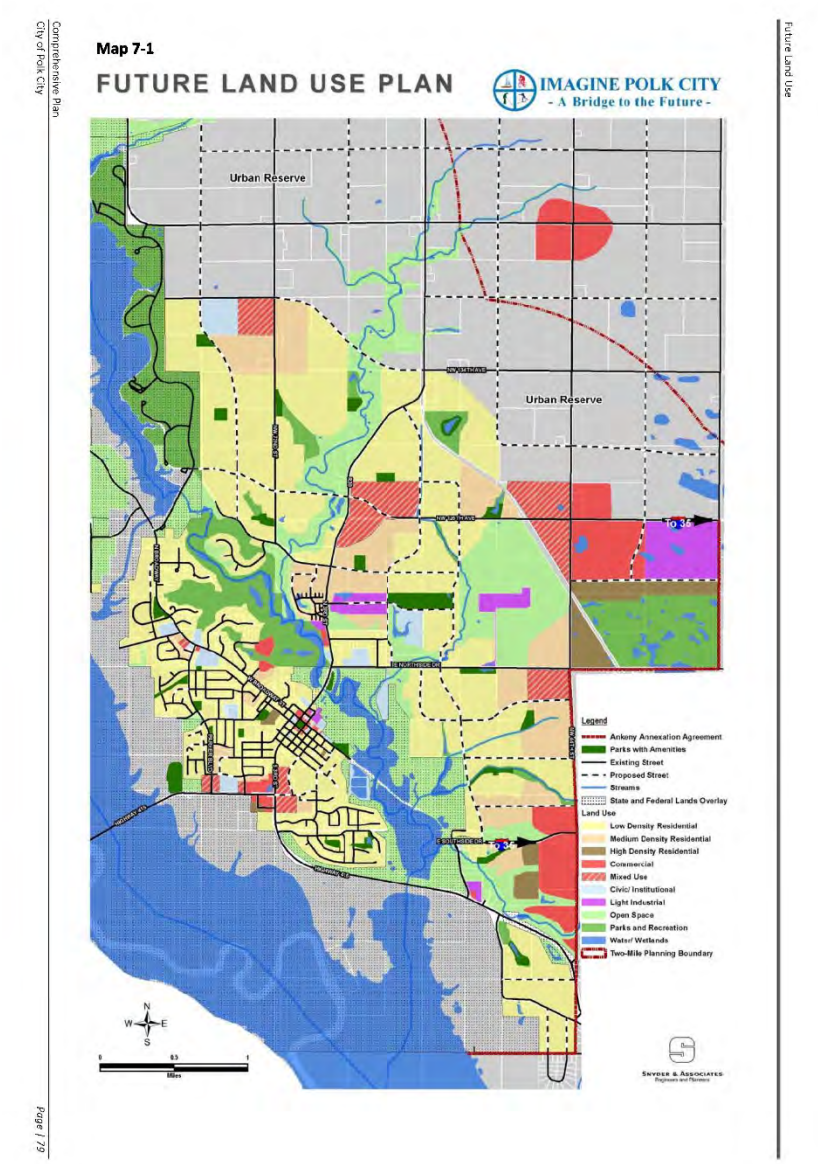
3.2.4.13 POLK CITY

Figure 35 - Polk City Existing Land Use Map



Source: Polk City Comprehensive Plan

Figure 36 - Polk City Future Land Use Map



Source: Polk City Comprehensive Plan

3.2.4.14 RUNNELLS

There are no reported growth/development areas pertaining to Runnells.

3.2.4.15 SAYLOR TOWNSHIP

There is no anticipated future development in Delaware Township to report at this time.

3.2.4.16 URBANDALE

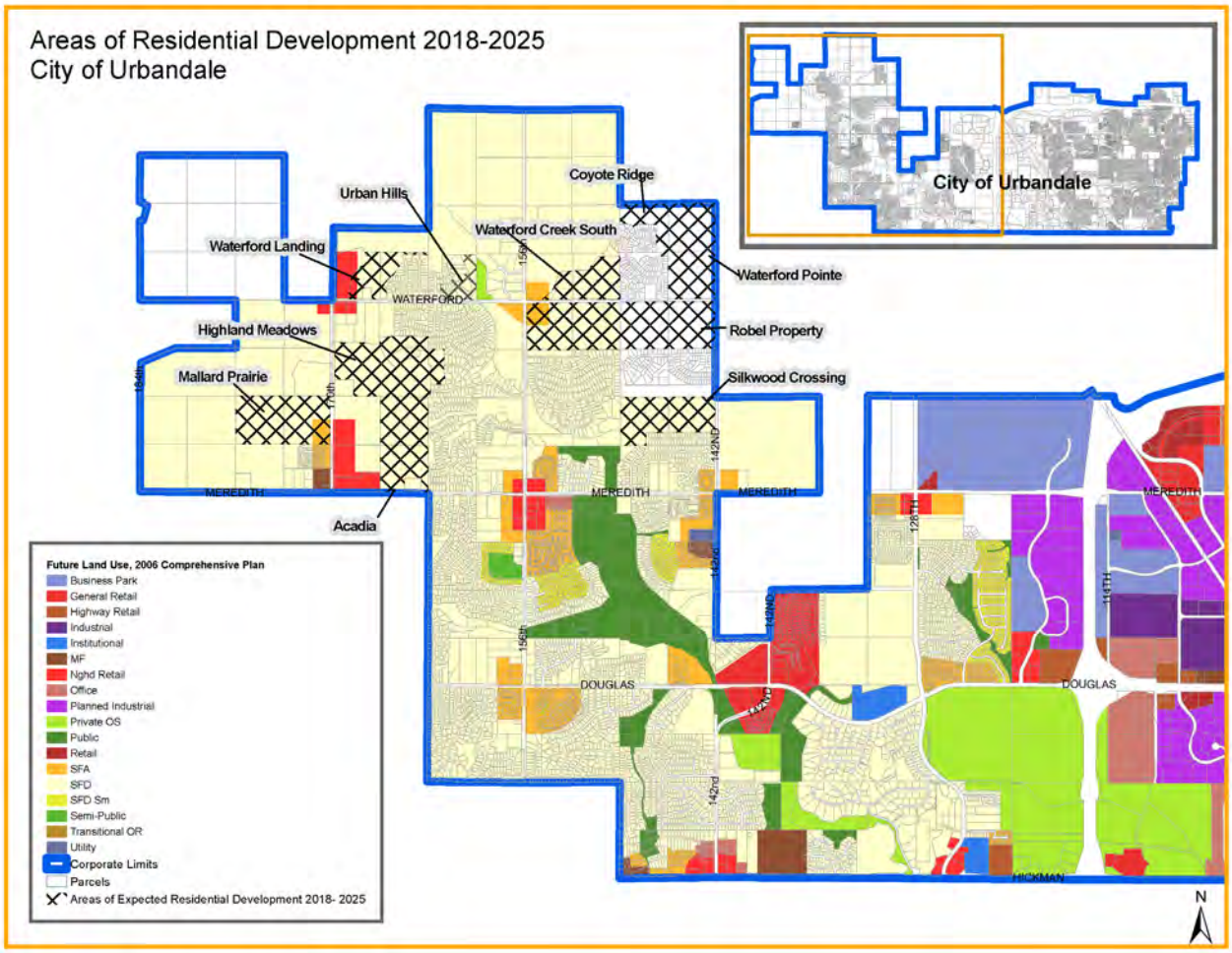
Figure 37 shows expected residential growth areas for Urbandale through 2025, which includes development on both sides of 170th Street, due in part to the on-going construction of the new Radiant Elementary school in the Waukee School District, as well as development north and south of Waterford Road, prompted by the 2016 Home Show Expo held at the nearby Coyote Ridge development. Beyond 2025, residential growth will continue west of 170th Street toward the current corporate boundary at 184th Street, and north of Waterford Road.

The only hazard area identified is these areas is the Walnut Creek floodplain. It's generally protected by City ownership everywhere to the south of Waterford Road, except for a couple of isolated properties that the City has been unable to acquire. Those are protected by floodplain management regulations.

There is still vacant ground for residential development in the Polk County portion of Urbandale, but a development timetable remains uncertain. No hazard areas exist within this area.

Nonresidential development should continue in the Plum Drive and Northpark Drive corridors, and the Paragon Office Park, due in large part to the opening of the Interstate 35/80 interchange at 100th Street later this year. No hazard areas are located in any of those areas except a small part of the North Walnut Creek floodplain, which is protected by floodplain management regulations and by easements that prevent development within the regulated hazard area.

Figure 37 - Urbandale Planned Areas of Residential Development 2018-2025



Source: Provided by Urbandale HMPC Representative

3.2.4.17 WEST DES MOINES

While the majority of West Des Moines that is within Polk County has already been developed, the age of the building stock and infrastructure will require a redevelopment mindset for future growth and development within the county footprint. The SE area of the City within Polk County is relatively rural in context but has started seeing development, partially in response to infrastructure brought in to serve several data centers under construction in the area. In contrast to the 2010 Comp plan that identified the SE area of the City for primarily Office and Business Park uses, due to numerous creeks and topography challenges, the new Comprehensive Plan anticipates primarily residential uses (both single and multi-family with a wide range of densities) with the inclusion of commercial nodes to support the residential areas and promote walkability. With the increase in rain events and rainfall amounts, the flood potential of the numerous creeks in these growth areas is noted in the Comprehensive Plan (Sustainability and Resiliency Topic). Action items include utilizing a comprehensive approach to storm water management, studying stormwater management at a watershed scale, and as a proactive measure, the City has pursued modifying stream beds to allow dispersion of flood waters.

The West Des Moines Comprehensive Plan (Connect 2 Create) was adopted November 2022. With West Des Moines as one of the fastest growing cities in the state, it would be impossible to exactly predict what the city will need in 10-20 years. But what the Plan does is set goals for what our community aims to be and create a path to achieve these goals. This Comprehensive Plan covers a wide array of topics that while separate from one another, when combined are central to the growth and development of a city that meets the needs of all its residents, businesses, and visitors. With this Plan being strategic in nature, projecting growth and development has moved away from planned staging areas used in the previous Comprehensive Plan to employing a companion Action Plan that contains Goals, Strategies and Actions to guide growth and development.

With a focus on flexibility and the ability to be nimble in reacting to changing development demands, new land uses were established within the Plan that generalize land use classification and allow for a broader mix of uses where appropriate for the community. These multi-use classifications allow for the inclusion of residential uses into commercial and office areas to not only support the commercial and employment bases, but to also allow for a more compact and walkable community. The Plan also utilizes a “Place Type” concept that recognizes and promotes the city’s desire to provide a unique character and design for areas of the community while allowing flexibility to accommodate the market and provide the development professionals the opportunity to be creative in achieving the intent of the land use.

Figure 38 - West Des Moines Land Use Map

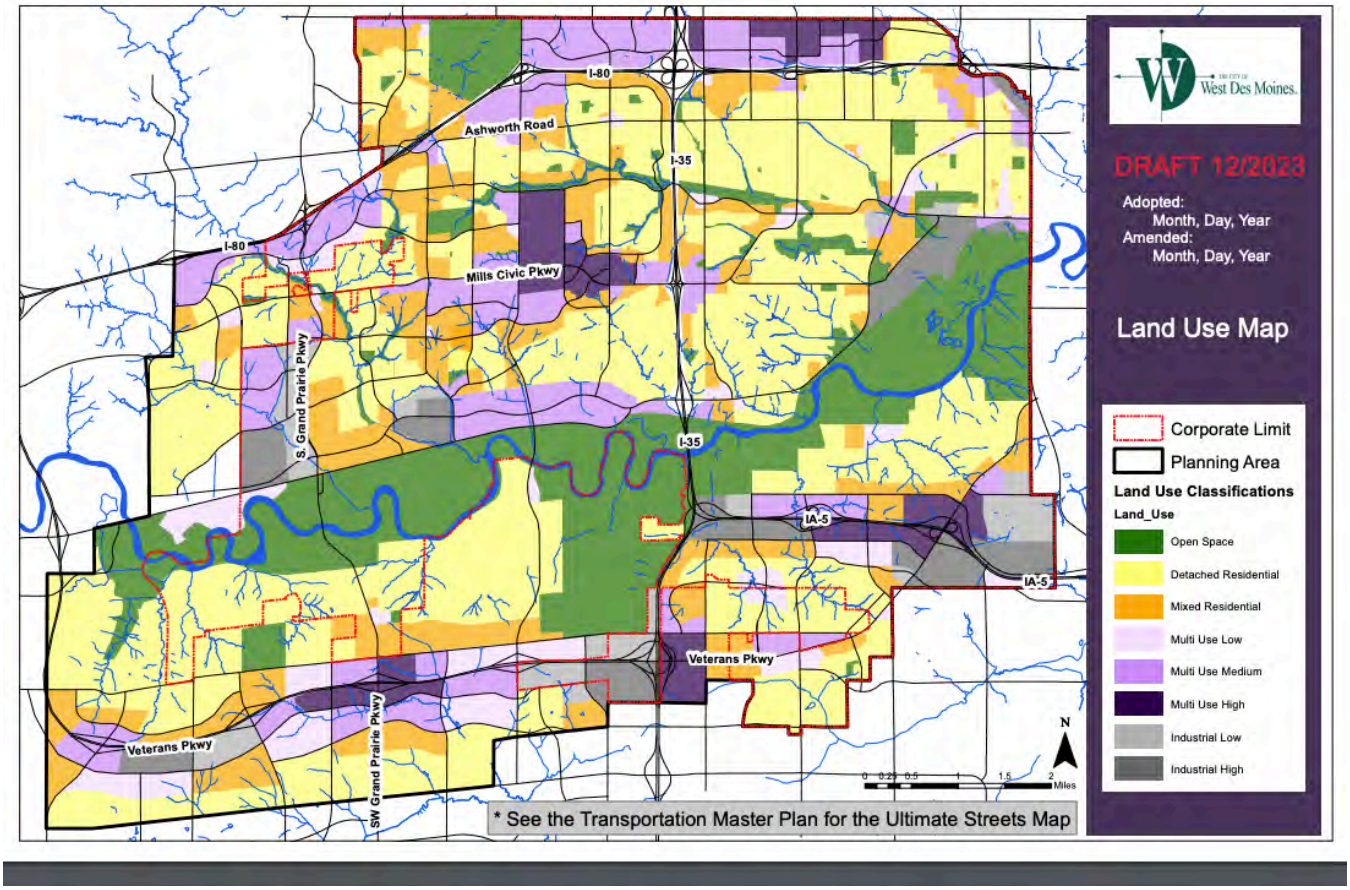
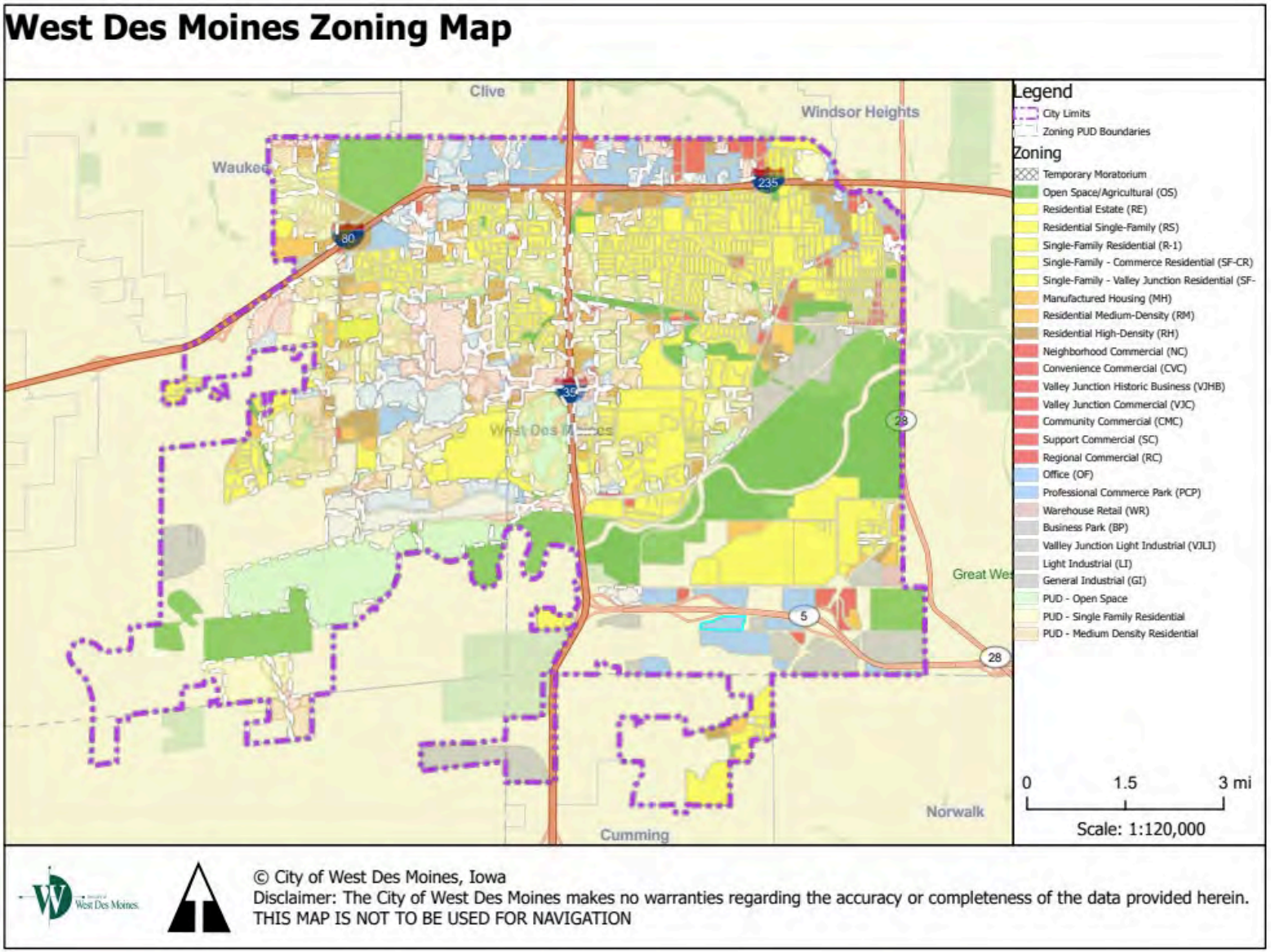


Figure 39 - West Des Moines Zoning Map

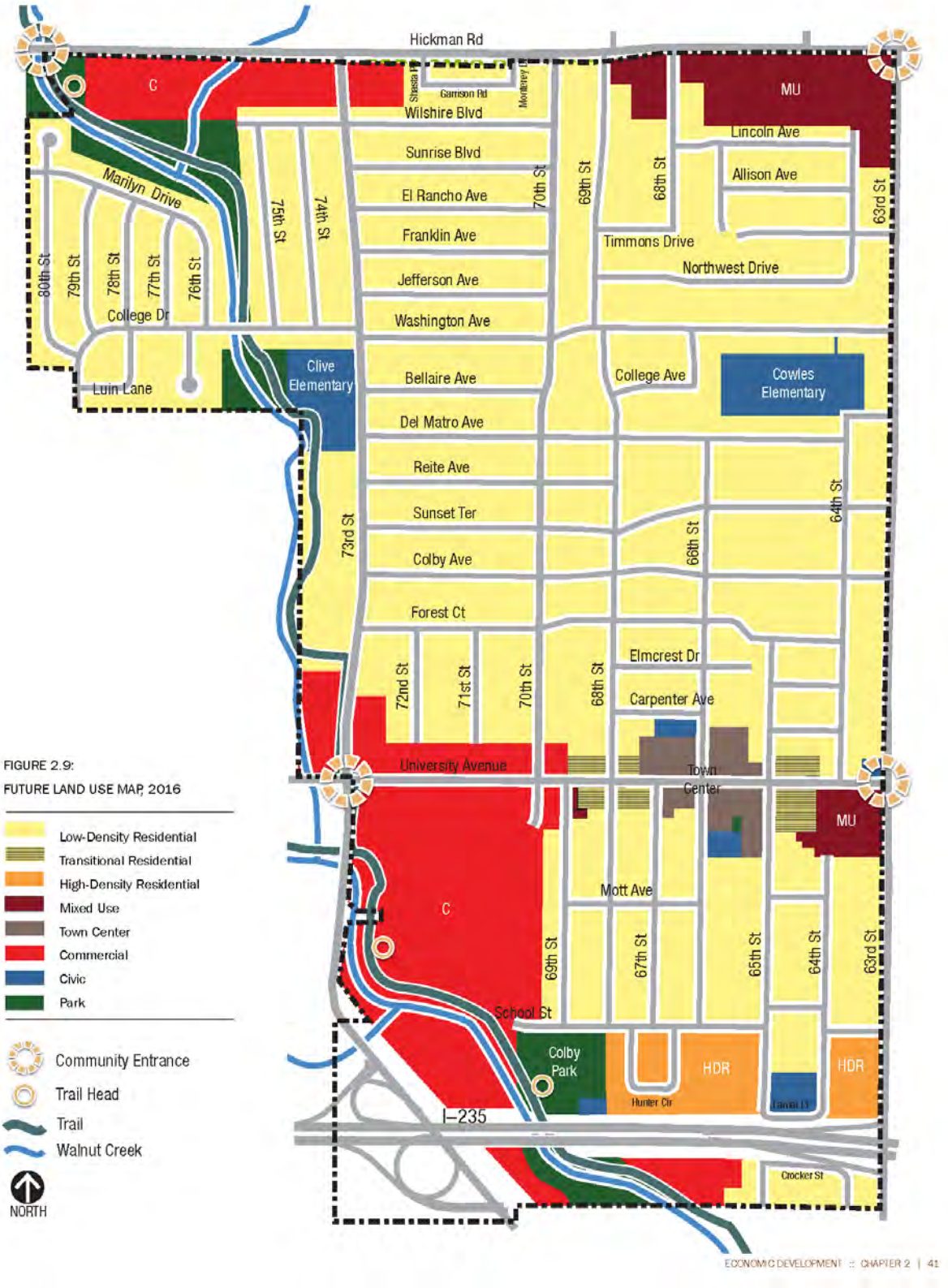


3.2.4.18 WINDSOR HEIGHTS

Windsor Heights is a landlocked community with limited availability for new residential development. The population is expected to remain relatively stable over the next decade, with perhaps a small increase of around 200 people, for a total of around 5,000. The only potential concerns/issues related to hazards would be an increased density of existing sites through redevelopment or an increase in household size.

The City of Windsor Heights Comprehensive Plan (adopted February 20, 2017) llays out a strategy for the continued vitality of the City through 2030. The redevelopment of 63rd Street and Hickman Road will begin in the next couple of years. Figure 40 provides the City of Windsor Heights Future Land Use map.

Figure 40 - City of Windsor Heights Future Land Use Map, 2016



3.2.4.19 SCHOOL DISTRICTS' FUTURE DEVELOPMENT

This section summarizes future development for the participating school Districts.

Ankeny School District: Elementary #12 is scheduled to open in August 2024. A two-story building for classroom/conference space along with team locker rooms and offices for officials at the competition field is scheduled to open in fall 2024. A ticket booth/concession stand/restrooms/storage building is scheduled to open in the summer of 2024 at the south middle school. The Innovative Hub Career & Technical Education building is scheduled to begin construction in fall 2024 with anticipated completion in August 2026.

Bondurant-Farrar School District: The Bondurant-Farrar Community School District recently completed a new 7th/8th grade Junior High Building that opened in the Fall of 2022. In the Fall of 2023, district voters passed a $48 million bond referendum. Included in that bond will be the following projects:

- An addition to Bondurant-Farrar High School which will include commons expansion, additional related arts classrooms, renovated and additional space for boys and girls wrestling, and a larger fitness/weight room space. Construction will start in the Summer of 2024 with completion aimed at August of 2025.
- A new elementary school. This building will initially serve PK-K students with expansion possible up to 2nd grade. Construction is set to start in 2025 with completion by August of 2027.
- Activity spaces to include varsity baseball and softball at the high school complex and tennis and pickleball courts in a partnership with the City of Bondurant. This project will also include additional parking space at the high school and junior high campus. These added projects have been necessitated by a growing community and student population. It is possible that the district will ask voters to pass another bond as early as 2028 to add additional space at the high school and to address infrastructure needs in all of the district's older buildings.

Des Moines Independent School District: Beginning in 2012, more than $67 million in additional renovation and construction projects were scheduled at Des Moines schools. One new building and one new addition were completed since the previous plan:

- Casady Education Center (pre-K and administration) located at 16th and Allison; and
- Merrill Middle School Addition

Johnston School District: The Johnston Community School District does not anticipate any significant development or expansion in the next five years.

North Polk School District: The school district recently completed construction of a new high school and new outdoor facility;

Southeast Polk School District: Southeast Polk Community School District has completed numerous projects to enhance safety and security, including recent building double-entry projects in all schools and an overall plan to use grant funds to 1) update and enhance camera systems in all schools, 2) update and enhance swipe card entry systems in all schools, 3) install exterior door readers in all schools, and 4) purchase and implement base/portable radios in all schools with direct connection to first responders (all to be completed by the fall of 2024). The former stadium has been completely replaced with a new structure and location that includes numerous amenities, and a plan is under development to renovate the former stadium for use by the Junior High School.

Urbandale School District: Future facilities planning includes a decision on the usage of two vacant buildings. Additionally, future planning includes establishing a permanent, district-owned Administrative Office building.

West Des Moines School District: West Des Moines Community Schools has a 10 year facilities improvement plan that will be updated and revised where needed before the end of 2024. The seven major projects at Clive Learning Academy, Crestview Elementary, Fairmeadows Elementary, Stillwell Jr. High, Valley Southwoods Freshman High School a re complete or very near complete. Crossroads Elementary and Hillside Elementary are still to be designed and constructed and completion date for these buildings is to be determined. As part of our 10 year plan, we may also schedule a review of Clive Learning Academy, Crestview Elementary, Fairmeadows Elementary, Stillwell Jr. High, Valley Southwoods Freshman High School, Westridge Elementary, and Indian Hills Jr. High.

3.3 HAZARD PROFILES AND VULNERABILITY

Requirement §201.6(c)(2)(i): [The risk assessment shall include a] description of the location and extent of all natural hazards that can affect the jurisdiction. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events.

Each hazard identified in the previous section is profiled individually in this section in alphabetical order. The level of information presented in the profiles varies by hazard based on the information available. With each update of this plan, new information will be incorporated to provide for better evaluation and prioritization of the hazards that affect the planning area. Detailed profiles for each of the identified hazards include information categorized as follows:

- Hazard Description - This section consists of a general description of the hazard and the types of impacts it may have on a community. It also includes the ratings assigned to the hazard relative to typical warning times and duration of hazard events as described in Table 13.
- Geographic Location - This section describes the geographic location of the hazard in the planning area. Where available, maps are utilized to indicate the specific locations of the planning area that are vulnerable to the subject hazard.
- Extent - This section provides information as to the extent of the hazard (i.e. the size or degree of impacts). Extent is addressed in more detailed/quantified terms (where available) in the Vulnerability Section for each hazard.
- Previous Occurrences - This section includes information on historic incidents and their impacts.
- Probability of Future Occurrence - The frequency of past events is used to gauge the likelihood of future occurrences. Where possible, the probability or chance of occurrence was calculated based on historical data. Probability was determined by dividing the number of events observed by the number of years and multiplying by 100. This gives the percent chance of the event happening in any given year. An example would be three droughts occurring over a 30-year period, which suggests a 10 percent chance of a drought occurring in any given year. For each hazard, the probability is assigned a rating as defined in Table 13.

3.3.1 VULNERABILITY ASSESSMENT OVERVIEW

Requirement §201.6(c)(2)(ii) :[The risk assessment shall include a] description of the jurisdiction's vulnerability to the hazards described in paragraph (c)(2)(i) of this section. This description shall include an overall summary of each hazard and its impact on the community.

Requirement §201.6(c)(2)(ii)(A) :The plan should describe vulnerability in terms of the types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas.

Requirement §201.6(c)(2)(ii)(B) :[The plan should describe vulnerability in terms of an] estimate of the potential dollar losses to vulnerable structures identified in paragraph (c)(2)(i)(A) of this section and a description of the methodology used to prepare the estimate.

Requirement §201.6(c)(2)(ii)(C): [The plan should describe vulnerability in terms of] providing a general description of land uses and development trends within the community so that mitigation options can be considered in future land use decisions.

Requirement §201.6(c)(2)(ii): (As of October 1, 2008) [The risk assessment] must also address National Flood Insurance Program (NFIP) insured structures that have been repetitively damaged in floods.

Following the hazard profile for each hazard is the vulnerability assessment. The vulnerability assessment further defines and quantifies populations, structures, systems, natural, historic, and cultural assets, and community activities vulnerable to natural hazards. Additionally, vulnerability descriptions for each hazard include information categorized as:

Existing Development - This section provides the potential losses to existing development. Where data is available, this section provides estimated financial losses as well as the methodology used. For hazards with an overall "Low" rating, potential losses may not be discussed.

Future Development - This section provides information on how vulnerability to this hazard will be impacted by planned future development as well as information for jurisdictions to consider in planning future development.

Climate Change – This section discusses the potential impacts of climate change on frequency and severity of hazards.

The vulnerability assessments were conducted based on the best available data and the significance of the hazard. Data to support the vulnerability assessments was collected from the following sources:

- Statewide GIS data sets compiled by state and federal agencies;
- Written descriptions of assets and risks provided by participating jurisdictions;
- Existing plans and reports;
- Personal interviews with planning committee members and other stakeholders; and
- Other sources as cited.

3.3.2 ANIMAL/PLANT/CROP DISEASE

3.3.2.1 DESCRIPTION

Agricultural infestation is the naturally occurring infection of vegetation, crops or livestock with insects, vermin, or diseases that render the crops or livestock unfit for consumption or use. Because of the overall substantial agricultural industry and related facilities and locations within Polk County, the potential for infestation of crops or livestock poses a significant risk to the county, as well as the State of Iowa. Virtually all Iowa cropland is vulnerable to disease and other agricultural pests.

Producers are required by state law to report any of the reportable animal diseases to the Iowa Department of Agriculture and Land Stewardship's (IDALS) Bureau of Animal Industry. The IDALS's Bureau of The Center for Agriculture Security is the lead coordinating bureau for any emergency response for an agriculture incident.

It is worth noting that, according to FEMA Hazard Mitigation Assistance (HMA) guidance, mitigation projects for mitigating animal/plant/crop disease are not eligible for FEMA HMA grant funding. We are concerned about mitigation efforts for this hazard, but more in-depth analyses of this hazard (in relation to mitigation) is handled by other agencies: for instance, the Iowa Department of Health and Human Services (IHHS), the Iowa Department of Agriculture and Land Stewardship (IDALS) or the Iowa Department of Natural Resources (DNR).

Disease outbreaks can also occur in wild animal populations. The IDALS's Bureau of Animal Industry also monitors wild animal species and game throughout the State as well as diseases that may impact them.

3.3.2.2 LOCATION

According to U.S. Department of Agriculture (USDA) estimates, there are 768 farms in Polk County covering approximately 179,322 acres of land, which accounts for roughly half of all land in the County.[2] The northern and eastern portions of Polk County contain the majority of the County's agricultural land while the southern and western portions of the county are more urbanized. However, even the more urban parts of Polk County may also be subject to possible consequences of animal/plant/crop disease like food shortages and a decline in economic activity tied to agriculture (food production, distribution, etc.). A disease mutating and gaining the ability to infect humans, while unlikely, is a possibility which poses a risk to all individuals in Polk County. While the specific consequences may vary between communities, all jurisdictions in Polk County are considered equally vulnerable to this hazard.

[2] U.S. Department of Agriculture. "2022 Census of Agriculture." nass.usda.gov, 2023. https://www.nass.usda.gov/Publications/AgCensus/2022/Full_Report/Volume_1,_Chapter_2_County_Level/Iowa/st19_2_002_002.pdf.

3.3.2.3 EXTENT

The impacts of animal/plant/crop disease can range from loss of production in a single field, herd, or flock to loss of production across an entire region. A recent example of widespread impacts from animal/plant/crop disease is the outbreak of avian influenza in 2022 which resulted in the deaths of more than 50 million animals across 46 states.

3.3.2.4 PAST OCCURRENCES

The Iowa Department of Agriculture and Land Stewardship (IDALS) monitors and reports on the following animal reportable diseases in Iowa:

- Avian Influenza
- Bovine Spongiform Encephalopathy (BSE) Disease
- Chronic Wasting Disease
- Exotic Newcastle Disease
- Foot and Mouth Disease
- Johne's Disease
- Pseudo rabies
- Scrapie
- West Nile Virus

Not all of these diseases have impacted Polk County, but it is important to remain vigilant. Diseases of particular concern are described below, including documented instances of these diseases:

Avian influenza is a significant concern in Iowa as the State is among the top producers of poultry products. Health professionals continue to monitor the possibility of an avian (bird) flu pandemic associated with a highly pathogenic avian H5N1 virus. Since 2003, avian influenza has been spreading through Asia. A growing number of human H5N1 cases contracted directly from handling infected poultry have been reported in Asia, Europe, and Africa, and more than half the infected people have died. There has been no sustained human-to-human transmission of the disease, but the concern is that H5N1 could evolve into a virus capable of human-to-human transmission.

Bovine Spongiform Encephalopathy (BSE) "mad cow" disease is a chronic, degenerative disease affecting the central nervous system of cattle. Cases have been found world-wide since 1986, but in Canada and the U.S. only a single cow was reported with BSE in 2003.

Chronic Wasting Disease (CWD) is a fatal, neurological disease of farmed and wild deer and elk. The disease has been identified in wild and captive mule deer, white-tailed deer and North American elk, and in captive black-tailed deer. Recently from 1996 to June 2002, it was diagnosed in farmed elk herds in Colorado, Kansas, Montana, Iowa, Oklahoma, South Dakota, and the Canadian

Provinces of Alberta and Saskatchewan. Then from 2000 to June 2002, CWD has also been found in wild deer in northwestern Nebraska, southern New Mexico, southwestern South Dakota, south central Wisconsin, northwestern Colorado, and the Canadian Province of Saskatchewan.

Exotic Newcastle disease (END) is a contagious and fatal viral disease affecting all species of birds. There was an epidemic of END in California in 2003 that is resulting in the death of millions of chickens and other birds, and costing millions of dollars. END is probably one of the most infectious diseases of poultry in the world. END is so virulent that many birds die without showing any clinical signs.

Foot and Mouth Disease (FMD) is a severe, highly communicable viral disease caused by a fast-spreading virus, and all cloven-hoofed animals are susceptible to the disease. Nearly 100 percent of the animals may die of the disease. In Iowa, susceptible animals to this disease include; domestic swine, cattle, captive and wild deer, sheep goats, bison, elk, llamas, cloven- hoofed zoo animals.

Johne's (yo-knees) disease is a contagious, chronic and eventually fatal infection that affects the small intestine of ruminants, including cattle, sheep and goats. Johne's, also called Para tuberculosis, is a slow progressive wasting disease with an incubation period of usually 2 or more years. Johne's is a reportable disease, but not a quarantinable disease.

Pseudo rabies is a viral disease most prevalent in swine, often causing newborn piglets to die. Older pigs can survive infection, becoming carriers of the pseudo rabies virus for life. Other animals infected from swine die from pseudo rabies, which is also known as Aujeszky's disease and "mad itch." Infected cattle and sheep can first show signs of pseudo rabies by scratching and biting themselves. In dogs and cats, pseudo rabies can cause sudden death. The virus does not cause illness in humans. Due to an extensive eradication program, Iowa & the rest of United States are free of pseudo rabies. According to the Iowa Department of Public Health, Center for Acute Disease Epidemiology, there was 11 reported rabies cases in Iowa in 2022 and 9 reported in 2021. Specifically in Polk County, there were 2 reported case in 2022 from bats.

Scrapie is a fatal, degenerative disease affecting the central nervous system of sheep and goats that is very similar to mad cow disease, although it does not cause disease in humans, and has been present in the U.S. for over 50 years. Infected flocks that contain a high percentage of susceptible animals can experience significant production losses. In these flocks, over a period of several years, the number of infected animals increases and the age at onset of clinical signs decreases making these flocks economically unviable. Animals sold from infected flocks spread scrapie to other flocks. The presence of scrapie in the U.S. also prevents the export of breeding stock, semen, and embryos to many other countries. Currently there is a national program underway to eradicate scrapie in the U.S.

According to the CDC, West Nile Virus is the leading cause of Mosquito-borne disease in the U.S.[3] Approximately 1 in 5 infected individuals experiences fever and other symptoms, and

[3] Centers for Disease Control and Prevention. "West Nile Virus." cdc.gov, August 23, 2023. https://www.cdc.gov/westnile/index.html.

approximately 1 in 150 infected individuals development a more severe illness which can be fatal. In 2023, there were 17 confirmed cases of West Nile Virus in horses across the State including 1 confirmed case in Polk County. Between 1999 and 2022 there were 637 reported cases of West Nile Virus across Iowa, including 41 in Polk County.

3.3.2.5 PROBABILITY OF FUTURE OCCURRENCES

Some level of agricultural infestation is normal in Iowa. The concern is when the level of an infestation escalates suddenly, or a new infestation appears, overwhelming normal control efforts. Many factors influence disease development in plants, including hybrid/variety genetics, plant growth stage at the time of infection, weather (e.g., temperature, rain, wind, hail, etc.), single versus mixed infections, and genetics of the pathogen populations. As a result of impact management capabilities, including crop insurance and employment of various techniques to limit infestations, it was determined that the likelihood of a naturally occurring agricultural infestation event causing extensive damage is "Unlikely".

3.3.2.6 VULNERABILITY ASSESSMENT

While the specific impacts of animal/plant/crop disease can vary, all jurisdictions in Polk County are considered vulnerable to these impacts. The table below describes the potential impacts of animal/plant/crop disease on community lifelines.

Table 24. Potential Impacts of Animal/Plant/Crop Disease on Community Lifelines

Lifelines	Impact Type	Description
Water & Wastewater Systems		Water and wastewater systems may need to be shut down or isolated if animal/plant/crop diseases become waterborne.
Food, Shelter, & Housing		A significant outbreak of disease among crops or livestock could lead to food insecurity in the planning area.

Lifelines	Impact Type	Description
Health & Medical		Although unlikely, it is possible for animal disease to affect humans. A zoonosis is an infectious disease which jumps from a non-human to a human. Examples include Ebola, salmonellosis, and bird flu.

A) People

A plant disease outbreak or a pest infestation could negatively impact crop production and agriculturally dependent businesses. An extreme outbreak or infestation could potentially result in billions of dollars in production losses. The cascading net negative economic effects could result in wide-spread business failures, reduction of revenues, and soaring food prices. These effects will disproportionately impact individuals living below the poverty line. Individuals with dietary needs may also be disproportionately impacted.

B) Structures

Buildings are largely invulnerable to this hazard – its impacts are primarily economic and environmental, rather than structural affects. However, it may be necessary to clean and disinfect buildings which have housed diseased animals or crops.

C) Systems

Animal/plant/crop diseases are unlikely to be consequential for most community systems with the exception of water and wastewater. If diseases become waterborne, it may be necessary to temporarily suspend normal water and wastewater services. Sanitizing water and wastewater infrastructure may be costly and time consuming.

D) Natural, Historic, and Cultural Resources

The primary concern related to animal/plant/crop disease in Polk County is the impact on agriculture. However, “wild” plants such as vegetation in public spaces can be damaged, and it may be necessary to remove infected vegetation to prevent further spread of a disease. Disease outbreaks can also occur in wild animal populations. The IDALS’s Bureau of Animal Industry also monitors wild animal species and game throughout the State as well as diseases that may impact them.

E) Community Activities

Community activities which are intertwined with agriculture can be significantly impacted by animal/plant/crop disease. Farmers markets are an example of this type of community activity. An

ourbreak of animal/plant/crop disease may require the temporary cessation of these community activities due to concerns about the spread of disease.

Existing Development

The rise of backyard chickens and other livestock as household pets can potentially have health impacts within the urban centers even in the absence of livestock farms. Rough estimates of potential direct losses from a maximum threat event fall in a range of 1-50 percent of annual crop receipts. Based on a worst case scenario where 50% of crop production is lost in a given year due to agricultural infestations, the total direct costs could approach $80,561,500.

Future Development

Future development is not expected to significantly impact the planning area's vulnerability to this hazard. However, if crop production and numbers of animals/livestock increases, the amount vulnerable to infestation also increases. Additionally, increased density of crops and animals/livestock may enable diseases to spread more quickly.

Climate Change

With observed and predicted increases in average atmospheric temperature, and the resulting increase in the moisture-holding capacity of the air, the Fourth National Climate Assessment anticipates increased pressure on agriculture from diseases and pests. Increases in extreme weather patterns (namely drought intermingled with excessive heat and extreme precipitation events) can also be expected to increase the likelihood of plant and animal diseases and pests. As an example, hotter conditions with increased moisture may lead to growth in mosquito populations. Mosquitos often carry diseases which can infect both animals/livestock and humans.

Hazard Risk Score

Table 25. Animal/Plant/Crop Disease Probability and Health Impact Ratings

Health Severity	Community Impact	Public Health System Impact	Healthcare System Impact	Total Health Hazard Score	Probability
2	0	2	0	4	Unlikely

3.3.3 CLIMATE CHANGE

3.3.3.1 DESCRIPTION

According to the Iowa Department of Natural Resources, climate change "refers to any significant change in the measures of climate lasting for an extended period of time. This includes major changes in temperature, precipitation, wind patterns, or other effects that occur several decades or longer."[4] Unlike other hazards profiled in this plan, climate change will not directly impact the people or critical facilities of Polk County. Instead, climate change can affect the frequency and severity of other hazards.

3.3.3.2 EXTENT

FEMA's latest Local Mitigation Planning Policy Guide notes that the impacts of climate change "create new risks to state and local governments and challenge pre-existing mitigation plans." Climate change also "pose[s] a unique threat to the nation's most at-risk populations by exacerbating the impacts of disasters on underserved and socially vulnerable populations who already experience the greatest losses from natural hazards."[5]

In 2009, the Iowa Climate Change Impacts Committee was established by Iowa Code section 473.7, and the committee was tasked with reviewing climate change impacts in Iowa and exploring possible policy recommendations. The committee released a report on January 1, 2011 detailing its findings. Several key findings from the report, as well as further information provided on the Iowa DNR website, are described below.

Precipitation

Iowa has experienced significant changes in precipitation, including a long-term upward trend in precipitation. The report by the Iowa Climate Change Impacts Committee determined that the annual average precipitation across the state had increased by 8% between 1873 and 2008. Additionally, the report concluded that the state was receiving larger amounts of moisture through heavy precipitation during the summer months. Heavy precipitation creates a greater risk of flooding as rainfall in excess of 1.25 inches per day initiates runoff and increases streamflow.[6] Increased runoff can lead to soil erosion which may create new agricultural challenges and exacerbate existing ones. The report states that the

[4] Iowa Department of Natural Resources. "Climate Change." iowadnr.gov. Accessed February 22, 2024. https://www.iowadnr.gov/Conservation/Climate-Change.
[5] Federal Emergency Management Agency. "Local Mitigation Planning Policy Guide," no. FP 206-21-0002 (April 19, 2022). https://www.fema.gov/sites/default/files/documents/fema_local-mitigation-planning-policy-guide_042022.pdf.
[6] Iowa Climate Change Impacts Committee. "Climate Change Impacts on Iowa 2010." publications.iowa.gov, January 1, 2011. https://publications.iowa.gov/14167/1/ClimateChangeExecSum121610.pdf.

precipitation trends are generally expected to continue well into the future, although there may be year-to-year variations.

Temperatures

Between 1873 and 2008 Iowa experienced a long-term upward trend in temperature. However, the extent of temperature increases in Iowa during this time varies by season and time of day. For instance, the Iowa Climate Change Impacts Committee's report concluded that daily average temperatures during winter months increased six times more than daily average temperatures during summer months. Furthermore, nighttime temperatures increased more than daytime temperatures. Interestingly, the Iowa Climate Change Impacts Committee notes in their report that the state as a whole has been experiencing fewer extreme high summer temperatures, which seems counter to global and continental trends. The committee suggests that this is likely due to increased summer precipitation and moist soils which suppress surface heating and daytime summer maximum temperatures.[7]

Humidity

In addition to precipitation and temperature, climate change appears to be contributing to changing humidity patterns across Iowa. The report by the Iowa Climate Change Impacts Committee notes that humidity – particularly in the summer months – has risen substantially. At the time the report was produced, the average amount of atmospheric moisture present during summer days had increased by 13% over the previous 35 years. Moisture plays an important role in the formation of storm systems, and an increase in moisture may subsequently increase the frequency and severity of storms in Iowa.

In addition to the report produced by the Iowa Climate Change Impacts Committee, the effects of climate change were assessed in the 2023 Iowa Hazard Mitigation Plan. The plan generally agrees with the findings of the 2010 report that trend lines for observed precipitation, temperature, and humidity in Iowa suggest long-term increases in all three. The 2023 Iowa Hazard Mitigation Plan also considered the impacts of climate change on a variety of individual hazards – Table 26 shows the expected changes.

Table 26. Hazard-by-Hazard Expected Climate-Related Changes

Hazard	Expected Changes
Dam/levee failure	Increasing. Flooding is expected to increase, increasing strain on levees and likelihood of failure or overtopping. Drought is also expected to increase, which may cause levees, especially those containing clay, to crack. Heavy precipitation events following these dry spells (a cycle expected to increase with climate change) can worsen the cracks. Dams

[7] Iowa Climate Change Impacts Committee. "Climate Change Impacts on Iowa 2010." publications.iowa.gov, January 1, 2011. https://publications.iowa.gov/14167/1/ClimateChangeExecSum121610.pdf.

	most likely to experience increase risk of overtopping, rather than catastrophic failure, but flooding strains the structure as well.
Drought	Varies regionally. May be more common in northwestern and southern counties. Northeastern counties, while potentially experiencing a greater increase in precipitation than the rest of the state, may be affected by drought more often than they are now. Precipitation could be expected to vary more both temporally and spatially, with one area experiencing record heat and drought while nearby areas experience heavy precipitation. Drought may take on a seasonal aspect, with excessive moisture in spring and insufficient moisture in summer. Iowa already sees wetter spring and fall and dryer summers than in its previous climate decade. Higher temperatures will increase evaporation rates, intensifying naturally-occurring droughts.
Earthquake	No change expected.
Expansive soils	Uncertain. The expected increase in the back and forth between heavy precipitation and drought could conceivably lead to more damage, but no research in the US was readily available to support this.
Excessive heat	Increasing. Days with maximum temperatures above 90 are projected to occur 2 to 5 times more often by 2050 in the best case scenario. Days above 100, currently occurring once every few years in most of Iowa, are projected to happen several times per year by 2050. Days over 105 may not be rare either. 'Cooling degree days' will nearly double in about 50 years, straining energy systems and increasing chances of blackouts and brownouts (barring adaptation measures).
Flooding (flash and riverine)	Increasing. Precipitation is expected to increase in intensity, though not necessarily frequency. With average annual precipitation increasing only 1" to 4" in any county by 2050, however, heavy precipitation events are likely to become more common. Eastern Iowa seeing higher increase in precipitation than western Iowa indicates greater likelihood of flooding in eastern Iowa.
Grass or wildland fire	Increasing. If droughts become more common or more intense, even seasonally, dry vegetation will be more prone to ignition. High temperatures will also pull moisture from vegetation. Wind is not expected to increase.
Landslides	Uncertain. Landslide damage is not centrally recorded in Iowa and has not been an impactful hazard, historically. With increasing heavy precipitation events, landslides may become more common, but resulting damage is uncertain.
Sinkholes	Uncertain. Sinkholes in central Iowa are general related to abandoned coal mines. Sinkholes in northeastern Iowa are generally related to the karst landscapes prevalent there. Increased precipitation could conceivably speed the dissolution of soluble rocks, and drought could conceivably lead

	to subsidence from loss (or over-pumping) of groundwater, but no definite projections are available. The freeze-thaw cycle can break up the ground and lead to sinkholes. Dry soil freezes faster and deeper than moist soil, so water acts as a barrier to freezing. With warming winters and wetter springs projected, the coinciding timing of each may or may not intensify the effects from the freeze-thaw cycle.
Thunderstorm lightning and hail	Increasing. Warming summers and higher quantities of water in the atmosphere will likely fuel increased thunderstorm development.
Tornado/windstorm	Uncertain. Frequency and intensity do not appear to be changing. Some evidence suggests that 'Tornado Alley' – an area most favorable to tornado formation – is moving east, but the biggest effect of this is in the South. The likelihood of a tornado in any given part of Iowa has not significantly shifted. As temperatures rise, however, the length of tornado season may increase.
Winter Storm	Decreasing. As winters warm faster than summers, winter weather is expected to cause less damage in coming decades. Overnight lows are increasing quickly relative to daytime temperatures, meaning there may be less than historical rates of re-freezing of snow and ice at some points in winter, and more at other points. Winters are becoming shorter as well.

3.3.3.3 VULNERABILITY

Climate change is a phenomena which has the potential to impact virtually all aspects of life in Polk County, and all jurisdictions within the county are considered vulnerable to the impacts of climate change. The possible effects of climate change on public health, infrastructure, and the economy are described in this section.

Public Health

Changes in precipitation, temperature, and humidity can quickly create conditions which are detrimental to human health. One of the most straightforward risks associated with climate change is more frequent and extreme heat. The elderly and young children are particularly susceptible to death and illness caused by extreme heat. Additionally, people living below the poverty line or lacking access to a vehicle may be more vulnerable to extreme heat due to having fewer available options for relief from dangerous conditions.

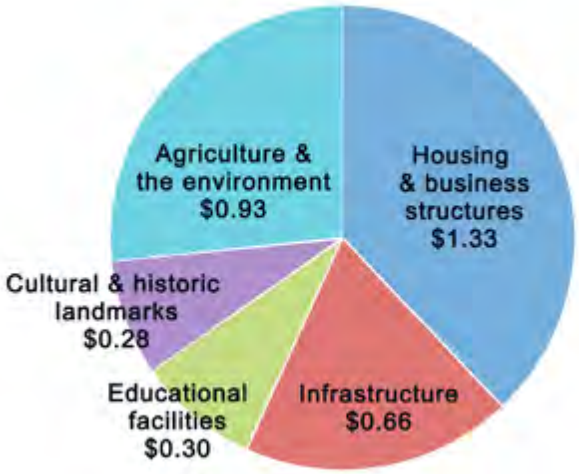
The Iowa Climate Change Impacts Committee stated in their report that "Allergic diseases are expected to become more widespread and more severe due to a northward expansion of the range of cetain allergenic plants and climate-associated increases in pollen loads." Climate change may increase the length and severity of the pollen season for allergy sufferers. For example, the ragweed season in the northern Great Plains and Upper Midwest is now 10 to 21 days longer than it was in 1995, because the first frost in fall is later. Warmer, wetter conditions may also result in larger

populations of disease vectors such as mosquitos. The elderly, young children, individuals with pre-existing health conditions, and socially vulnerable populations are likely to be disproportionately impacted by these changes.

Infrastructure

The consequences of weather-related events are costly to home owners, businesses, and public services and essential infrastructure. The U.S. Environmental Protection Agency notes that most of the U.S. built environment was not designed with climate change in mind, and the potential impacts of climate change are particularly concerning given the current state of infrastructure across the country. Many of the bridges, dams, pipelines, roads, and other infrastructure elements in the U.S. are already in need of repair.[8] If climate change continues to increase both the frequency and severity of storms then it is reasonable to expect the associated consequences to also increase in frequency and severity. Furthermore, it is conceivable that the cost of mitigating against many hazards will also increase as more substancial actions become necessary to adequately protect homes, businesses, and critical infrastructure. As past climate is no longer a good predictor of future climate, new infrastructure will need to be designed and constructed in consideration of potential future conditions to maximize its potential useful life.

Figure 41. Distribution of Weather-Related Losses in Iowa



Source: Climate Change Impacts on Iowa 2010, accessd 2/22/2024
https://publications.iowa.gov/14167/1/ClimateChangeExecSum121610.pdf

Economy

The Iowa Climate Change Impacts Committee acknowledges in its report that the long-term consequences of climate change on the overall economy are uncertain, but certain industries appear to already be adapting. One example of how climate change may be altering business practices is the

[8] US EPA, OAR. "Climate Change Impacts on the Built Environment." Overviews and Factsheets, October 19, 2022. https://www.epa.gov/climateimpacts/climate-change-impacts-built-environment.

way in which Iowa's prominent insurance industry is currently respondign to changes in the climate. The insurance industry appears to be developing novel ways to assess the risks of climate change in addition to identifying areas where climate change-related risks have not yet been considered. Other fields like civil engineering appear to be placing a greater emphasis on incorporating potential impacts of climate change, and increasing demands on the energy grid may lead to shifts in labor productivity and manufacturing.[9]

The impacts of climate change on agriculture are particularly important in Polk County. Improved management and genetics, higher fertility, and reduced drought stress have all been partially credited for the steady increase of corn and soybean yields since the 1940's, but crop production remains highly dependent on climate. The report from the Iowa Climate Change Impacts Committee notes the following ways in which increases in precipitation, temperature, and humidity are impacting agriculture:

- Increased soil erosion and water runoff
- Delayed planting season and increased replanting of damaged croplands
- Delayed nitrogen application and increased nitrogen losses
- Enhanced development and spread of crop pathogens
- Potential reduction in productivity and lifespan of domestic livestock
- Shorter corn grain-filling period and an associated decrease in grain yields
- Potential for increased crop damage from more frequent and severe storms

Hazard Risk Score

Table 27. Climate Change Probability and Health Impact Ratings

Health Severity	Community Impact	Public Health System Impact	Healthcare System Impact	Total Health Hazard Score	Probability
1	1	1	1	4	Highly Likely

3.3.4 CYBERATTACK

3.3.4.1 DESCRIPTION

A cyberattack can be defined as any intentional effort to steal, expose, alter, disable, or destroy data, applications, or other assets through unauthorized access to a network, computer system or digital device. Phones and communications systems, home appliances and security systems, transportation systems, medical systems, utility services, and many more aspects of society rely on networked technologies to communicate and operate. While increased interconnectedness provides

[9] Iowa Climate Change Impacts Committee. "Climate Change Impacts on Iowa 2010." publications.iowa.gov, January 1, 2011. https://publications.iowa.gov/14167/1/ClimateChangeExecSum121610.pdf.

better and more efficient services in many ways, the increasing reliance on technology and cyber connections may lead to cyber incidents with far-reaching and devastating impacts. While cyberattacks frequently target private citizens and businesses, the primary focus of this plan is on cyberattacks which target community services and critical infrastructure.

3.3.4.2 LOCATION

Cyberattacks are not limited by geography, and many are conducted by actors outside of the target jurisdiction. Common targets include financial institutions, utility providers, government facilities (civilian and military), healthcare providers, and manufacturing.

3.3.4.3 EXTENT

In 2023, FEMA coordinated with the Cybersecurity and and Infrastructure Security Agency (CISA) to produce guidance titled *Planning Considerations for Cyber Incidents.* The document is intended to help emergency management personnel prepare for and respond to cyber incidents in their jurisdictions. The guidance from FEMA and CISA identifies three common cyber incident types, and these are detailed below. Although each is described independently, any of these incident types is likely to cause overlapping and cascading effects.

Hardware Destruction or Loss

A jurisdiction's critical services often depend upon the hardware (e.g., computers, industrial control systems, storage devices, network infrastructure) that perform critical functions. This hardware may enable day-to-day community functions, such as controlling drinking water systems and water filtration, managing court processes, providing payment systems for municipal services, and controlling traffic safety systems. It also may support critical emergency services, such as 911 services and radio transmitters used to communicate among emergency personnel. The infrastructure that provides these services may be overlapping. Hardware damage may result in the loss of computer and network communication services as well as the loss of data and can disrupt critical services. Hardware destruction or loss can be caused by malicious acts as well as natural hazards including floods, fires, winter storms, thunderstorms, and tornadoes.

Engineers may initially attribute the loss to equipment failure, but further examination may uncover that it was due to a malicious attack on the controller, where a threat actor has introduced malicious code or malware and caused a catastrophic failure of the controller. This can have potentially devastating consequences for the system, leading to extended downtime and disruption of operations. It is therefore essential to investigate any unusual losses of controllers and identify the cause to ensure the security of the system.

Network Unavailability, Compromise, Degradation, or Destruction

Networks enable computers to communicate and share information, and most critical services rely on networks. Incidents affecting networks may occur because of both malicious attacks and natural

disasters. Since many systems depend upon external organizations and are often provided by third parties, an incident affecting the jurisdiction may be the result of a third party's incident. The impact may vary from unreliable communication among computers to a complete loss of communication. Identifying how the jurisdiction uses networks helps the planning team to understand how the jurisdiction depends upon these systems and to evaluate the potential consequence of their loss.

Software Malfunction, Compromise, or Exploitation

Incidents affecting software may cause the loss or compromise of critical functions. Malicious actors may steal confidential information, modify and violate the integrity of information, or deny access to information by encrypting it and demanding money (ransom) to decrypt it. Malicious actors may also exploit software to compromise the integrity of physical systems such as security cameras, water and wastewater treatment, dams, traffic signs and signals, streetlights, pipelines, and facility management, which are often controlled (or monitored) by computerized industrial control systems.

3.3.4.4 PAST OCCURRENCES

The Internet Crime Complaint Center, or IC3, is the nation's central hub for reporting cyber crime, and the organization provides annual reports which detail reported cyberattacks in all 50 states, 6 territories, and the District of Columbia. According to IC3's latest report, there were 2,959 victims of cyberattacks in Iowa in 2022, which ranks 32nd. For reference, California was ranked 1st, with 80,776 cyberattack victims in 2022. In terms of losses, Iowa ranked 36th overall with reported losses totaling more than $42 million.[10]

In recent years, ransomware incidents have become increasingly prevalent among US state, local, tribal, and territorial governments and critical infrastructure entities, disrupting services. K-12 school districts have been a near constant ransomware target due to school systems' IT budget constraints and lack of dedicated resources, as well as ransomware actors' success at extracting payment from some schools that are required to function within certain dates and hours.

In early 2023, Des Moines Public Schools was the victim of a ransomware attack. The attack resulted in approximately 6,700 individuals having their sensitive data compromised, and the school district cancelled classes for several days following the attack. Troublingly, there are indications that attackers targeting school districts may be seeking sensitive data pertaining to students due to the value of this information on the black market.[11]

In 2022, health care services in Des Moines were disrupted by a cyberattack targeting CommonSpirit health, which operates more than 140 hospitals 21 states. The attack disrupted activity

[10] Internet Crime Complaint Center, and Federal Bureau of Investigation. "Internet Crime Report 2022." ic3.gov, March 14, 2023. https://www.ic3.gov/Media/PDF/AnnualReport/2022_IC3Report.pdf.
[11] Ta, Linh. "What Happened in Des Moines Schools' Ransomware Attack? Technology Director Tells All." Axios, December 13, 2023. https://www.axios.com/local/des-moines/2023/12/13/what-happened-in-des-moines-schools-ransomware-attack-technology-director-tells-all.

at MercyOne hospital in Des Moines. Electronic health records and patient portals were taken offline, and multiple ambulances typically routed to MercyOne were forced to divert to other area hospitals. The hospital was able to resume normal operations after a few weeks.[12]

It is important to note that this list of previous occurrences is not exhaustive. There is no centralized reporting of significant cyberattacks, and hundreds or thousands of individuals are the victims of smaller-scale cyberattacks on a daily basis. This list provides representative examples of the type of cyberattacks that have occurred in the past, and are likely to occur again in the future.

3.3.4.5 PROBABILITY OF FUTURE OCCURRENCES

State and non-state cyber actors continue to seek opportunistic access to critical infrastructure sector targets for disruptive and destructive attacks. Common tactics include denial-ofservice, website defacement, and ransomware. Some of these actors also seek to develop or improve existing capabilities that can disrupt industrial control systems that support US energy, transportation, healthcare, and election sectors.

The increased use of advanced technologies – including artificial intelligence, cloud computing, and remote sensors to inform city operations – creates new attack opportunities for adversarial state and non-state cyber actors to gain access to or carry out disruptive attacks against local government and critical infrastructure networks. Because significant cyberattacks occurred in Polk County in both 2022 and 2023 (as defined in "Past Occurrences" above), and in consideration of the ubiquity of small-scale cyberattacks impacting inviduals and businessses, the probability of future cyberattacks in the planning area is considered "likely."

3.3.4.6 VULNERABILITY

The consequences of cyberattacks can be difficult to predict ahead of time, but they are capable of crippling many of the services that communities rely upon. The impact of cyberattacks on community lifelines are detailed in the table below. All jurisdictions are considered equally vulnerable to cyberattacks. Larger cities like Des Moines may have high-profile targets which are appealing for cyber criminals, and smaller jurisdictions may be attacked due to a perceived lack of security.

[12] Baxter, Amy. "MercyOne Recovers from Cyberattack of Parent Company." healthexec.com, October 21, 2022. https://healthexec.com/topics/health-it/cybersecurity/mercyone-recovers-cyberattack-parent-company.

Table 28. Potential Impacts of Cyberattacks on Community Lifelines

Lifelines	Impact Type	Description
Water & Wastewater Systems		Cyberattacks can disrupt water supplies and potentially damage water infrastructure, leading to shortages. Wastewater treatment facilities may also be disabled by a cyberattack or taken offline by operators to prevent further intrusion, and this can increase the risk of waterborne diseases.
Health & Medical		Healthcare facilities are common targets of cyberattacks. A successful attack can severely disrupt facilities' ability to deliver medical care, and sensitive data can also be compromised.
Communications		Cyberattacks can disrupt communication networks, which can hinder the coordination of rescue and relief efforts as well as the dissemination of important information to the public.
Energy		Power outages can occur if cyberattacks hijack control of energy facilities, damage electrical infrastructure, or force operators to take the facility offline to avoid further damage. Fuel supply may also be disrupted, affecting not just transportation but also heating and power generation.

A) People

While cyberattacks do not cause physical harm to individuals, the victims of such attacks may lose access to their devices, have personal information disseminated online, and have funds frozen or stolen. Many cyberattacks directed at individuals target people who may lack the knowledge and tools to quickly recognize and/or stop a cyberattack. In broad terms, populations which are common targets of cyberattacks include the elderly and those with limited computer skills.

B) Structures

Structures are largely unaffected by cyberattacks.

C) Systems

In general, cyberattacks pose the largest threat to community systems. Utilities like electricity, gas, internet, and water and wasterwater services are frequently targeted by cyberattacks, and disruption of these services can have widespread impacts on a community. The impact of utility outages are addressed in greater detail in section 3.3.14. Today, a wide range of government functions including education, judicial systems, permitting, and others rely on digital infrastructure to operate effectively. While increased interconnectedness provides better and more efficient services in many ways, the increasing reliance on technology and cyber connections may lead to cyber incidents with far-reaching and devastating impacts.

D) Natural, Historic, and Cultural Resources

Natural, historic, and cultural resources are relatively safe from cyberattacks as these resources often lack avenues through which cyberattacks can be conducted.

E) Community Activities

Cyberattacks can disrupt community activities through both direct and indirect means. Direct attacks will cause disruptions by specifically targeting the activity, such as efforts to interfere with elections. Community activities can also be indirectly impacted by cyberattacks which disrupt services such as electricity and internet connectivity. Due to the various motivations of attackers, it is difficult to predict which community activities may be targeted.

Existing Development

Healthcare facilities, financial institutions, utility providers, and even school districts have been targeted by recent cyberattacks. These attacks can result in personal data breaches, extortion, and even disruption of critical functions. Due to indications from the FBI and CISA that these cyberattacks are unlikely to cease in the foreseable future, it is crucial for existing institutions to review their risk and, if necessary, adopt new strategies to mitigate against such attacks.

Future Development

There does not appear to be any indication that the trend of increased connectivity will plateau or reverse anytime soon. Additionally, cyber criminals can be expected to continue developing novel and sophisticated attacks. Therefore, it should be anticipated that cyberattacks will increase in frequency and scope, and it is critical for new development to consider the consequences of such attacks and proactively work to mitigate against them.

Climate Change

Climate change is not expected to have any direct impact on cyberattacks.

Hazard Risk Score

Table 29. Cyberattack Probability and Health Impact Ratings

Health Severity	Community Impact	Public Health System Impact	Healthcare System Impact	Total Health Hazard Score	Probability
2	3	2	3	10	Likely

3.3.5 DAM FAILURE

3.3.5.1 DESCRIPTION

Many of Iowa's community settlements were founded along rivers and streams due to their reliance on water resources. Often, these streams or rivers later needed a dam for flood control or a reservoir for a constant water source. A dam is defined as a barrier constructed across a watercourse for the purpose of storage, control, or diversion of water. Dams are typically constructed of earth, rock, concrete, or mine tailings. Dam failure is the uncontrolled release of impounded water resulting in downstream flooding, affecting both life and property. Dam failure can be caused by any of the following: flooding; earthquakes; flow blockages; landslides; lack of maintenance; improper operation; poor construction; vandalism; or terrorism.

The thresholds for when a dam falls under State regulation are outlined in Iowa Administrative Code 567-71.3 and are listed below. The thresholds are primarily based on both dam height and water storage volumes. State regulated dams are those dams that meet the following:

In rural areas:

a) Any dam designed to provide a sum of permanent and temporary storage exceeding 50 acre-feet at the top of dam elevation, or 25 acre-feet if the dam does not have an emergency spillway, and which has a height of 5 feet or more.

b) Any dam designed to provide permanent storage in excess of 18 acre-feet and which has a height of 5 feet or more.

c) Any dam across a stream draining more than 10 square miles.

d) Any dam located within 1 mile of an incorporated municipality, if the dam has a height of 10 feet or more, stores 10 acre-feet or more at the top of dam elevation, and is situated such that the discharge from the dam will flow through the incorporated area.

In urban areas:

Any dam which exceeds the thresholds in 71.3 (1) "a", "b", or "d".

Low head dams:

Any low head dam on a stream draining 2 or more square miles in an urban area, or 10 or more square miles in a rural area.

Dams are classified by the State of Iowa into three categories based on the potential risk to people and property in the event of failure. The classification can change over time due to changes in development downstream from the dam. Additionally, older dams may not have been built to the standards of their updated classification when this occurs. The Iowa Department of Natural Resources performs annual inspections on all high hazard dams in the State. However, planning team members

note that the IDNR dam safety program is substantially under-resourced, and that as dams age (particularly those that are privately owned), there may be a gap between the assessed risk and actual risk associated with these facilities, and lags in updating the data used in the development of this plan.

3.3.5.2 LOCATION

There are 78 regulated dams inside the county boundaries of Polk County. Of these, 12 are high hazard dams, 22 are significant hazard dams, and 44 are low hazard dams. Of the 12 high hazard dams, five are owned and operated by the United States Army Corps of Engineers (USACE). These include the Saylorville dam, two Big Creek dam structures, and two Red Rock dam structures. Table 30 provides the names, locations, and other pertinent information for all high and significant hazard dams in the planning area. Failure of these dams would significantly impact jurisdictions in the planning area. The Vulnerability Assessment section provides additional information about these dams.

Participating Jurisdictions Vulnerable to Dam Failure

The following jurisdictions are at least partially within the mapped inundation areas of a high hazard dams in Polk County and are thus defined as having vulnerability to this hazard:

- Clive
- Des Moines
- Grimes
- Johnston
- Polk City
- Runnells
- Urbandale
- West Des Moines
- Windsor Heights

While the communities listed above are those considered directly vulnerable to dam failures, communities in Polk County which are not within an inundation zone may still be impacted by a significant dam breach. In the event of a dam failure – particularly among the federally administered dams – communities which remain dry may be asked to support the directly impacted communities. Support may include housing displaced individuals, hosting emergency operations centers, and providing vital resources like fuel, electricity, and potable water.

Table 30 - High and Significant Hazard Dams in the Polk County Planning Area

Dam Name	Hazard Class	EAP	Dam Height (Ft)	Maximum Storage (Acre-Ft)	Normal Storage (Acre-Ft)	Last Inspection Date	Dam Owner
Big Creek Barrier Dam	H	Y	84	4,200	100	12/6/2022	U.S. Army Corps Of Engineers
Big Creek Diversion Dam	H	Y	80	27,500	7,600	12/6/2022	U.S. Army Corps Of Engineers
Saylorville Reservoir Dam	H	Y	125	641,000	74,000	12/6/2022	U.S. Army Corps Of Engineers
Clive Lake Dam	H	Y	37	1,253	274	03/12/2021	Country Club Owners Association
Easter Lake Stormwater Retention Basin – Site 9	H	Y	24	168	23	05/29/2020	City Of Des Moines
Fort Des Moines Park Dam	H	Y	49	240	120	3/12/2021	Polk Co Conservation Board
Glen Oaks Country Club Dam	H	Y	36	54	20	4/9/2019	Concert Glen Oaks LLC
Parkview Lake Dam	H	Y	21	95	15	06/28/2019	City Of Urbandale
Red Rock – Avon Station Remedial Works	H	Y	15	N/A	N/A	12/2/2021	U.S. Army Corps Of Engineers
Red Rock – Carlisle Remedial Dam	H	Y	13	N/A	N/A	12/2/2021	U.S. Army Corps Of Engineers
Twenty-Sixth Street Stormwater Detention Basin	H	Y	43	242	97	5/29/2020	City Of Des Moines

Dam Name	Hazard Class	EAP	Dam Height (Ft)	Maximum Storage (Acre-Ft)	Normal Storage (Acre-Ft)	Last Inspection Date	Dam Owner
West Lakes Office Park Dam	H	Y	41	267	85	7/16/2019	Iowa Farm Bureau Federation Property Management Inc.
Copper Creek Estates Dam	S	NR	21	24	15	4/8/2015	Copper Creek Estates Property Owners Association Inc.
Copper Creek Lake Dam	S	NR	31	103	46	4/8/2015	Copper Creek Golf Course, L.C.
Crescent Lake Dam	S	NR	22	27	15	N/A	Ladco Development
DMACC Dam	S	NR	37	306	88	05/29/2020	Iowa Dept. Of Transportation
Easter Lake Dam	S	NR	43	6,200	3,200	05/12/2017	Polk County Conservation Board
Easter Lake Retention Basin #1	S	NR	18	20	6	6/17/2010	City Of Des Moines
Easter Lake Retention Basin # 10	S	NR	22	23	10	6/17/2010	City Of Des Moines
Fountain View Lake Dam	S	NR	8	115	78	N/A	Fountain View Estates Homeowners Assn.
Jester Park Estates Dam	S	NR	11	58	21	N/A	Jester Lake Estates Homeowners Association
Lake Halice Dam	S	NR	27	120	75	05/28/2020	Lake Halice Lot Owners Assn.
Prairie Trail – CP5	S	NR	24	61	19	N/A	City of Ankeny
Prairie Trail Development – North Dam	S	NR	22	105	44	N/A	City Of Ankeny & DRA Properties

Dam Name	Hazard Class	EAP	Dam Height (Ft)	Maximum Storage (Acre-Ft)	Normal Storage (Acre-Ft)	Last Inspection Date	Dam Owner
Prairie Trail Development – South Dam	S	NR	31	114	46	N/A	City Of Ankeny & DRA Properties
SE Des Moines Stormwater Det. Dam #3	S	NR	34	185	30	6/17/2010	City Of Des Moines
SE Des Moines Stormwater Det. Dam #4	S	NR	26	95	20	6/17/2010	City Of Des Moines
Shryock Dam	S	NR	30	34	20	4/12/2018	Jeffrey Rains
Thirty-Fifth Street Dam	S	NR	23	95	25	11/29/2005	City Of West Des Moines
Thomas Mitchell Park Dam	S	NR	27	75	25	7/3/2018	Polk County Conservation Board
Thunder Bay Lake Dam	S	NR	19	119	60	N/A	Prairie Crossing Investments, Inc.
Ward Business Park Dam	S	NR	17	25	9	N/A	WBD Inc
Woodland Lake Dam	S	NR	43	723	421	05/26/2016	Woodland Lake Estates Homeowners Assn.
Woodlands Parkway Dam	S	NR	28	48	23	9/1/2009	Woodlands Parkway, LLC

Source: National Inventory of Dams accessed March 26, 2024; H = High, S = Significant; NR= Not Required; N/A = Not Available; EAP = Emergency Action Plan

The following maps provide important geographic context for this hazard. Figure 42 illustrates the locations of high hazard dams acoss the planning area, and Figure 43 broadly shows the inundation areas of the high hazard dams in Polk County.

Figure 42. Location of High Hazard Dams and Critical Facilities in Polk County

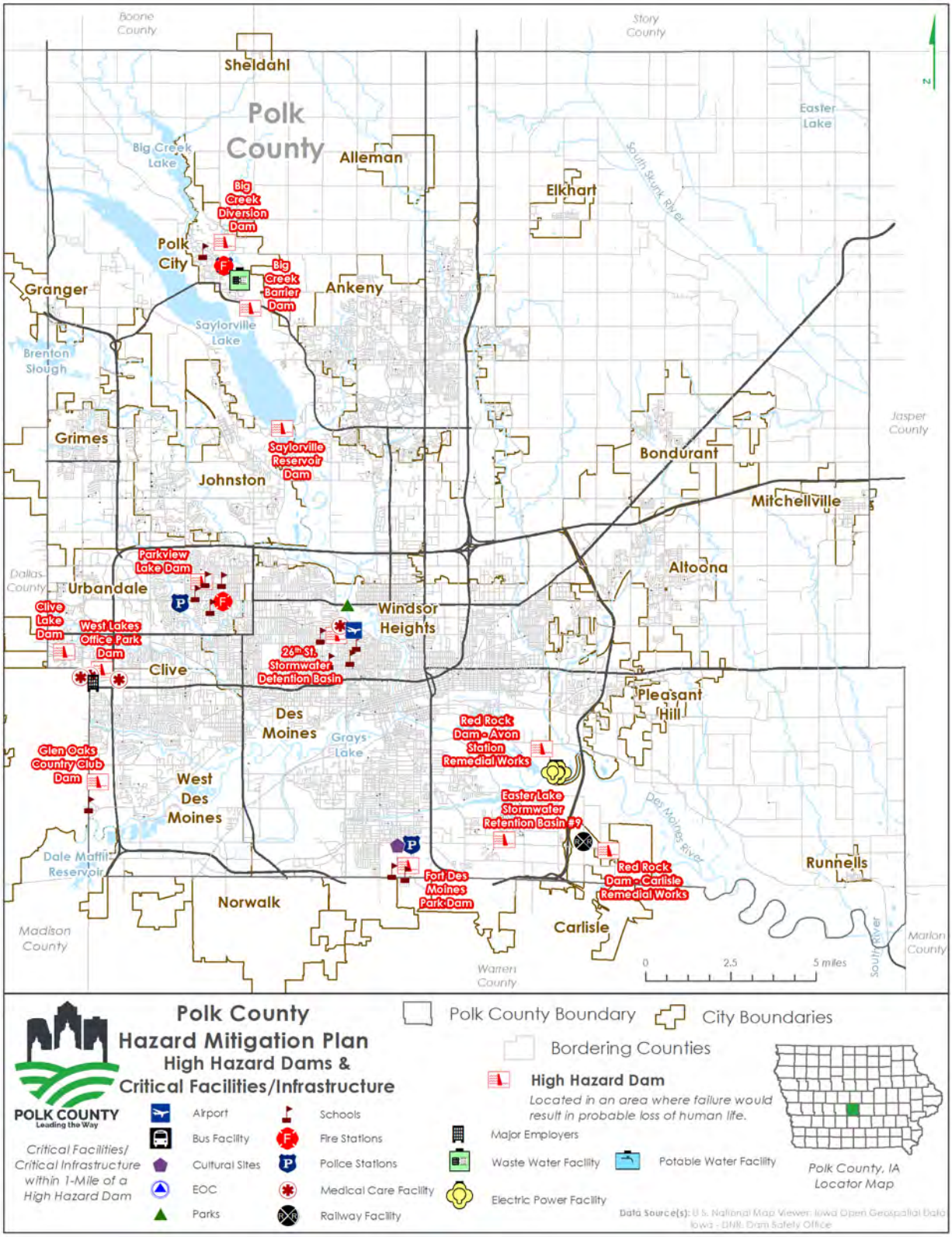
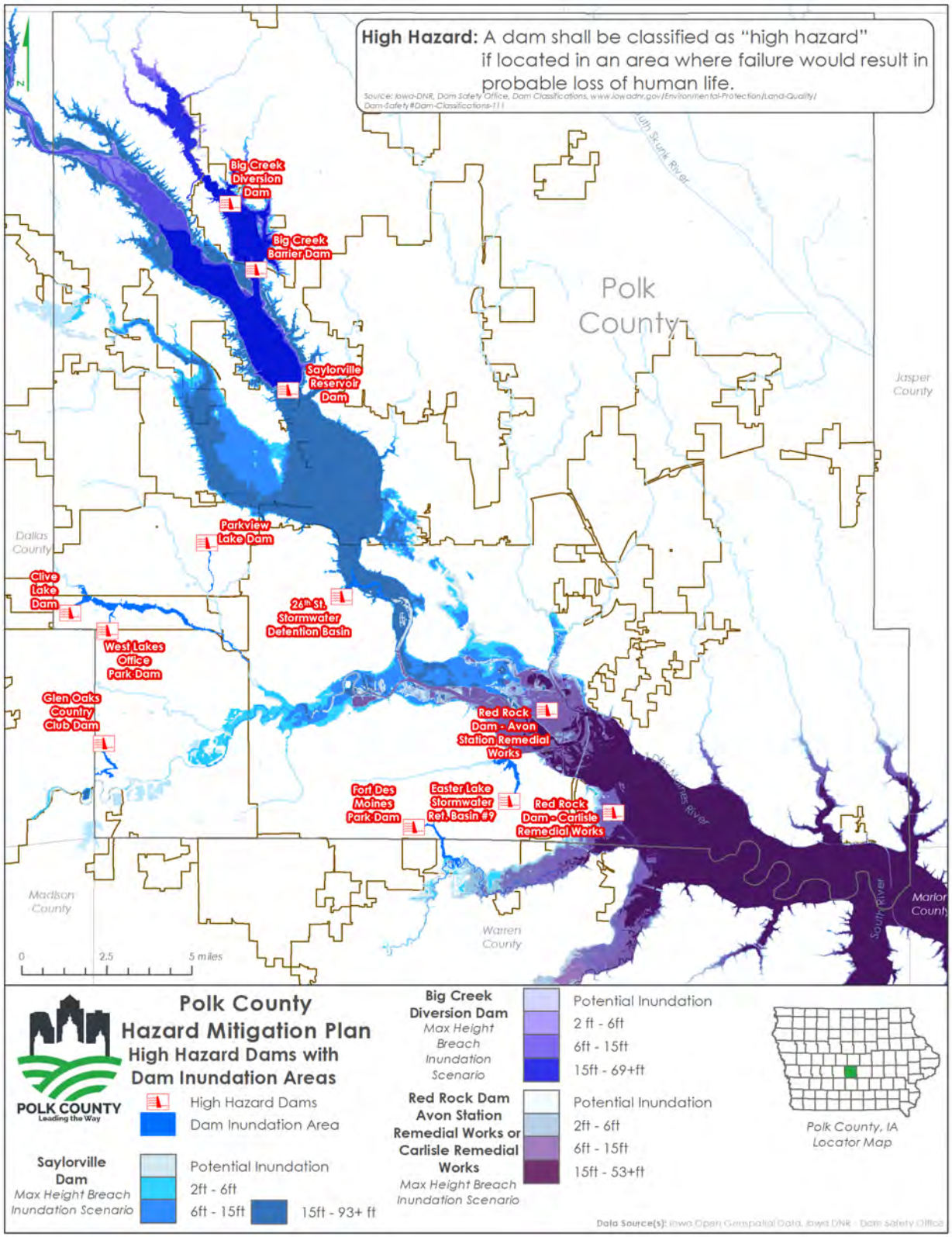


Figure 43. Polk County High Hazard Dams Inundation Areas



Upstream Dams Outside the Planning Area

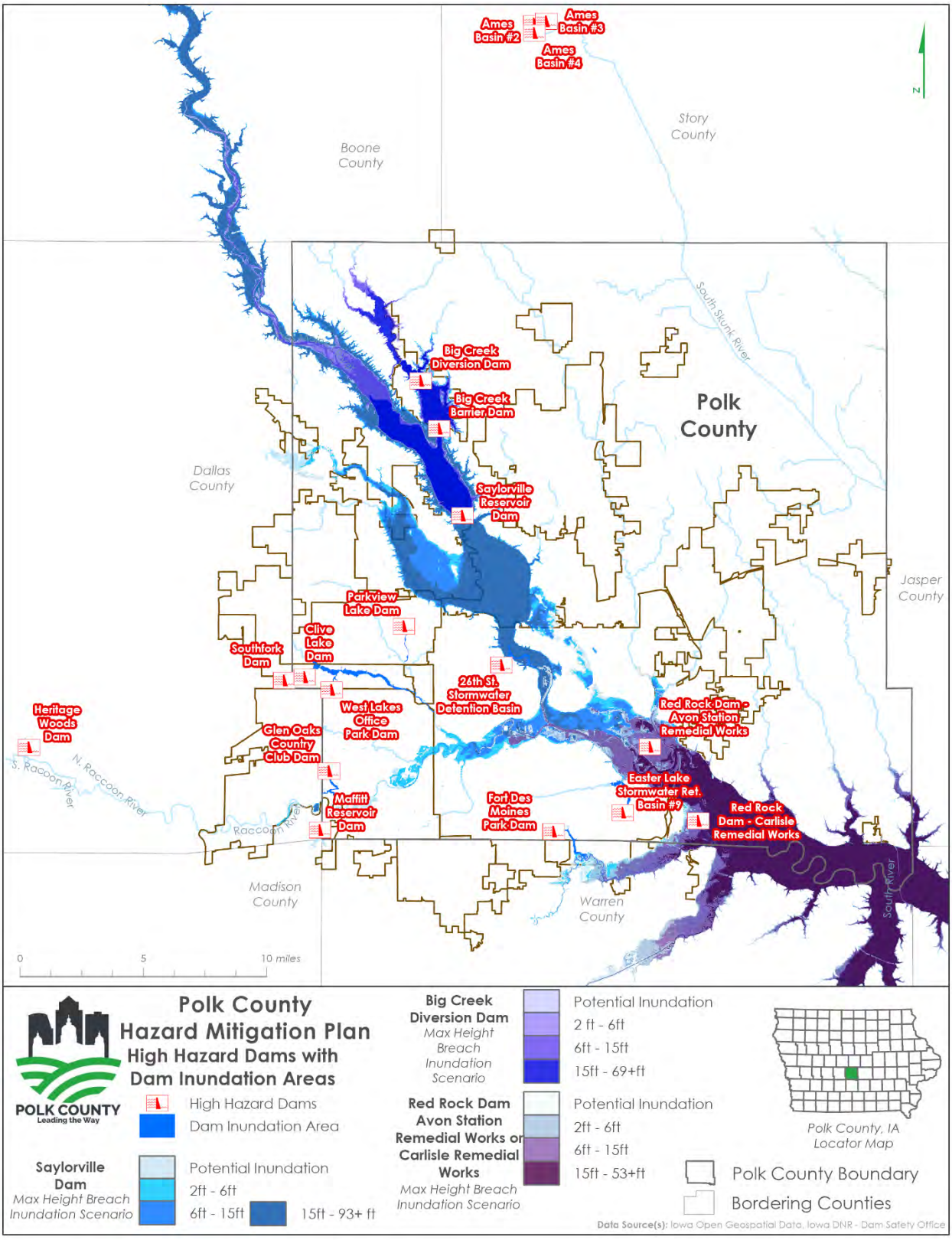
While this plan primarily focuses on assets within Polk County, it is important to remember that nature has no obligation to stay within political boundaries. To this point, an upstream dam breach may release water which will flow into Polk County. Rivers which flows into Polk County largely run through three adjacent counties: Boone, Dallas, and Story. According to the National Inventory of Dams, as of March 2024 there are no high hazard dams in Boone County, three in Dallas County, and three in Story County. The height, storage, condition, and additional information of these high hazard dams is show below in Table 31, and their location is shown in the map below. Inundation mapping for these dams was not available from the State of Iowa to support further analysis, but Figure 44 shows the locations of these dams relative to Polk County.

Table 31. High Hazard Dams in Adjacent Counties Upstream of Polk County

County	Dam Name	Dam Height (ft)	Normal Storage (acre ft)	Maximum Storage (acre ft)	Condition Assessment	Date of Last Inspection	Dam Owner
Dallas	Heritage Woods Dam	35	61	120	Satisfactory	05/21/2020	Heritage Woods LLC
Dallas	Maffitt Reservoir Dam	79	5,200	6,700	Satisfactory	06/12/2019	Des Moines Water Works
Dallas	Southfork Dam	38	67	204	Satisfactory	03/16/2021	Southfork Lake Lot Owners Assn
Story	Ames Basin #2	13	N/A	155	Satisfactory	06/09/2020	City of Ames Public Works
Story	Ames Basin #3	10	N/A	66	Satisfactory	06/09/2020	City of Ames Public Works
Story	Ames Basin #4	12	N/A	129	Satisfactory	06/09/2020	City of Ames Public Works

Source: National Inventory of Dams: https://nid.sec.usace.army.mil/#/ accessed 4/1/2024.

Figure 44: Location of High Hazard Dams in Adjacent Counties Upstream of Polk County



3.3.5.3 EXTENT

The repercussions of dam failures are largely determined by the volume of water released and the extent of people and property in the inundation zone. Dams are classified as High, Significant, or Low hazard to convey the potential impact a dam failure would have on upstream and/or downstream areas or at locations remote from the dam. This hazard potential classification system was produced by FEMA, and it categorizes dams based on the probable loss of human life and the impacts on economic, environmental, and lifeline interests. Improbable loss of life exists where persons are only temporarily in the potential inundation area. For instance, this hazard potential classification system does not contemplate the improbable loss of life of the occasional recreational user of the river and downstream lands, passer-by, or non-overnight outdoor user of downstream lands. Table 32 provides additional information about dam classifications.

Table 32. Dam Hazard Classifications

Hazard Class	Anticipated Loss of Human Life	Economic, Environmental, and Lifeline Losses	Description of Classification
High	Probable. One or more expected.	Yes (but not necessary for this classification)	Dams assigned the high hazard potential classification are those where failure or mis-operation will probably cause loss of human life.
Significant	None	Yes	Dams assigned the significant hazard potential classification are those dams where failure or mis-operation results in no probable loss of human life but can cause economic loss, environmental damage, disruption of lifeline facilities, or can impact other concerns. Significant hazard potential classification dams are often located in predominantly rural or agricultural areas but could be located in areas with population and significant infrastructure.
Low	None	Low and generally limited to owner	Dams assigned the low hazard potential classification are those where failure or misoperation results in no probable loss of human life and low economic and/or environmental losses. Losses are principally limited to the owner's property.

According to federal dam safety guidelines, the above hazard potential classification system should be utilized with the understanding that the failure of any dam or water-retaining structure, no matter how small, could represent a danger to downstream life and property. Whenever there is an uncontrolled release of stored water, there is the possibility of someone, regardless of how unexpected, being in its path.[13]

[13] Federal Emergency Management Agency. "Federal Guidelines for Dam Safety, Hazard Potential Classification System for Dams," April 2004. https://www.ferc.gov/sites/default/files/2020-04/fema-333.pdf.

3.3.5.4 PAST OCCURRENCES

To determine previous occurrences of dam failure within Polk County, the 2018 Polk County Hazard Mitigation Plan, the 2023 Iowa State Hazard Mitigation Plan, and the Stanford University's National Performance of Dams Program (**http://npdp.stanford.edu/**) were reviewed for historical dam failures. No record of dam failure within Polk County boundaries was found.

Although no record of dam failure within Polk County was found, there was concern during the very wet period of 1993 that water might overtop Saylorville Reservoir. With the outfall flowing at full capacity and water flowing out of the spillway, the reservoir did not overtop the dam.

3.3.5.5 PROBABILITY OF FUTURE OCCURRENCE

Other hazards could affect the likelihood of a dam failure which might affect upstream and downstream flooding potential. Flooding is one of the most likely causes of dam failure and may become more severe due to impacts of climate change and future development. Drought could impact water levels significantly which could (if sustained) affect the structural stability of dams. Finally, earthquakes, although unlikely, could directly damage dam structures.

Despite these potential cascading impacts, there is an overall low probability of dam failures in Polk County. All state-regulated dams are required to be regularly inspected and maintained. USACE is responsible for the inspection and maintenance of their four dams in the planning area. According to information provided by the Iowa DNR, all state-regulated high hazard dams in the County have been inspected since 2022. For these reasons the probability of dam failure in Polk County is considered to be "unlikely."

3.3.5.6 VULNERABILITY

Dam failure is typically an additional or secondary impact of another disaster such as flooding or earthquake. The impacts to the planning area and its municipalities from a dam failure would be similar in some cases to those associated with flood events (see the flood hazard vulnerability analysis and discussion). Based on the hazard class definitions, failure of any of the high hazard dams could result in a serious threat of loss of human life, serious damage to residential, industrial or commercial areas, important public utilities, public buildings, or major transportation facilities.

Table 33. Potential Impacts of Dam Failure on Community Lifelines

Lifelines	Impact Type	Description
Safety & Security		The sudden release of water can pose immediate threats to life and property, necessitating urgent evacuation and rescue operations. Law enforcement and emergency services are vital for managing the situation, ensuring public safety, and coordinating response efforts.
Health & Medical		Injuries and potential loss of life due to flooding require emergency medical services. Healthcare facilities need to be prepared for an influx of patients and possible challenges in maintaining operations, especially if they are in the flood zone.
Housing & Building Infrastructure		Flooding from dam failures can cause extensive damage to homes, businesses, and infrastructure, resulting in displacement of residents, and necessitating significant reconstruction efforts.
Utilities		Dam failures can disrupt essential services such as electricity, water supply, and communication networks, both directly through physical damage and indirectly due to access issues.
Transportation		Roads, bridges, and rail lines may be damaged or rendered impassable, disrupting the movement of people and goods and complicating rescue and recovery efforts.
Economic Stability		The economic impacts include the immediate costs of emergency response and infrastructure repairs, as well as longer-term effects on local economies due to business interruptions and loss of property.

Lifelines	Impact Type	Description
Environmental & Ecological		A dam failure can lead to environmental disasters, impacting water quality, wildlife habitats, and local ecosystems. Remediation and ecological restoration efforts may be required in the aftermath.

A) People

Individuals living in an inundation zone of a dam are inherently at a greater risk than those who reside outside of an inundation zone. Within the inundation zones in the planning area, virtually all people and property are vulnerable. Analysis of previous dam breaches across the country suggests that water can move at speeds approaching 120 miles per hour near the breach. The movement of water will gradually decrease in speed as it moves further away from the initial breach, but individuals living in inundation zones in the planning area may only have a few minutes before the impact of the water. Such a short window of time would make it difficult for anyone immediately downstream of a dam (regardless of socioeconomic status, ability, or access to transportation) to evacuate.

Part of this plan's analysis of high hazard dams included a comparison of high hazard dam inundation zones with 2020 Census tracts. This analysis allowed the planning team to estimate the populations vulnerable to high hazard dam failures in the planning area. These estimates are shown below in Table 34, which assumes that all residents of a census tract that contains part of the inundation zone would be in some way impacted by a dam failure, whether directly or indirectly, and are thus considered to be vulnerable. Analysis of Big Creek Barrier Dam was not possible due to data limitations. The potential failure at Saylorville Dam, which helps contain water in Saylorville Reservoir, poses the greatest risk to people in Polk County – more than 40% of the County's 2020 population is considered vulnerable to this threat.

Table 34. Populations Vulnerable to High Hazard Dam Failure in Polk County

High Hazard Dam	Population at Risk (2020 Census Tracts)
Big Creek Barrier Dam	N/A
Big Creek Diversion Dam	28,167
Clive Lake Dam	30,472
Easter Lake Stormwater Retention Basin – Site 9	7,754
Fort Des Moines Park Dam	7,107
Glen Oaks Country Club Dam	5,755
Parkview Lake Dam	11,710

Red Rock – Avon Station Remedial Works	68,718
Red Rock – Carlisle Remedial Works	68,718
Saylorville Dam	197,431
Twenty-Sixth Street Stormwater Detention Basin	18,027
West Lake Office Park Dam	6,625

B) Structures

A catastrophic dam failure can release a large wave of water which contains significant destructive potential. In some ways, water flowing through a dam breach is similar to a tsunami – both phenomena can destroy well-built structures and flatten large swaths of development. Only the most reinforced structures would be expected to remain standing, although the interior of these structures would likely still be ruined. The wave of water released by a dam failure will gradually lose speed as it travels further downstream. Eventually, the wave slows to a point where the primary threat to structures is no longer the initial impact of the water. At this point, the threat picture begins to mirror that of regular flooding events. See the flooding hazard for further information on how structures are impacted by flooding.

C) Systems

The impacts of dam failure on infrastructure systems like utility and transportation networks are similar to those on structures. In the immediate vicinity of a breach, infrastructure systems would largely be washed out/destroyed by the initial impact of the water. Eventually, the wave slows to a point where the initial impact is no longer the primary concern, and the threat picture begins to mirror that of regular flooding. See the flooding hazard for further information on how systems are impacted by flooding. Infrastructure systems which are not located in inundation zones are not expected to be directly affected by dam failures, but indirect impacts could occur. An example of an indirect impact would be increased traffic along undamaged roads due to other roadways being rendered unusable by dam failure. There are no hydroelectric dams in the planning area.

D) Natural, Historic, and Cultural Resources

Natural, historic, and cultural resources both above and below dams can be impacted by their failure. First, resources which are immediately below a dam failure are likely to be significantly damaged by the wave of water which rushes downstream. Natural resources in particular are likely to be affected as it is common for parks, open spaces, and recreational areas to be located around dams. Second, natural, historic, and cultural resources above a dam – especially those which are functionally intertwined with the reservoir/lake – can be impacted by dam failure. Marinas, beaches, nature trails, and many other resources which rely on the existing qualities of a reservoir/lake may be rendered unusable following a dam failure.

E) Community Activities

Community activities may need to be relocated, postponed, or cancelled following a dam failure. Community activities which rely on structures or space immediately downstream of a dam would need to be relocated or postponed for an extended period of time, while those nearer to the edges of inundation zones may only be disrupted for a few days. Activities which are dependent on existing conditions – both above and below a dam – may be permanently disrupted by a dam failure. Community activities which rely on existing conditions primarily involve recreational uses of the reservoir/lake such as boating, fishing, and swimming.

Existing Development

This section describes the risks and vulnerabilities to and from each HHPD in Polk County. This will include location and size of populations at risk from HHPDs, as well as potential impacts to institutions and critical infrastructure/facilities/lifelines.

The Iowa Department of Natural Resources coordinates the initial dam Emergency Action Plan (EAPs) review with the dam owner, local First Responders (police, fire), and local Emergency Management Agency. This is done to review the dam specific information and validate the emergency contacts and procedures. Polk County coordinated with Iowa DNR to obtain copies of the EAPs for each state-regulated HHPD in Polk County which were reviewed when developing this section of the plan.

The inundation maps shown in this plan utilize geographic data from the U.S. Army Corps of Engineers and Iowa DNR. 2020 Census tracts and parcel data were then used to approximate the number of people and structures which are located within the inundation areas of 11 of the 12 high hazard dams in Polk County. Parcel data was also used to approximate the value of vulnerable structures. Additionally, the number and type of critical facilities in the inundation areas were identified. An inundation map for the Big Creek Barrier Dam, which is managed by the U.S. Army Corps of Engineers, was not made available to the planning team. Therefore, the specific structures and people at risk to failure of the Big Creek Barrier Dam could not be determined. All other high hazard dams in Polk County are individually profiled below.

When available, the profiles below reference a condition assessment based on information available in the National Inventory of Dams. These assessments are based on the following criteria:

- **Satisfactory:** No existing or potential dam safety deficiencies are recognized. Acceptable performance is expected under all loading conditions (static, hydrologic, seismic) in accordance with the minimum applicable state or federal regulatory criteria or tolerable risk guidelines.
- **Fair:** No existing dam safety deficiencies are recognized for normal operating conditions. Rare or extreme hydrologic and/or seismic events may result in a dam safety deficiency. Risk may be in the range to take further action. Note: Rare or extreme event is defined by the regulatory agency based on their minimum
- **Poor:** A dam safety deficiency is recognized for normal operating conditions which may realistically occur. Remedial action is necessary. POOR may also be used when

uncertainties exist as to critical analysis parameters which identify a potential dam safety deficiency. Investigations and studies are necessary.

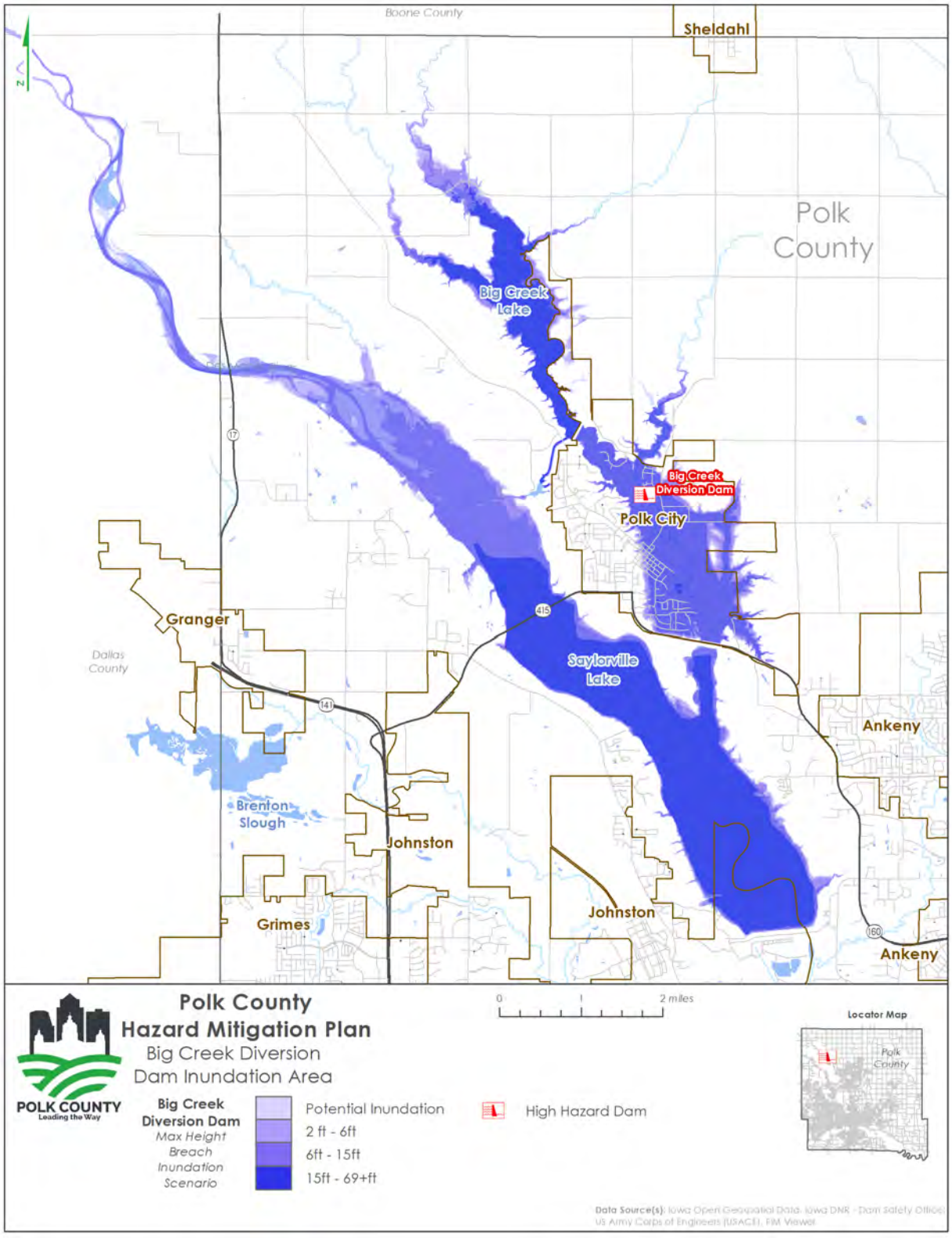
- **Unsatisfactory:** A dam safety deficiency is recognized that requires immediate or emergency remedial action for problem resolution.

Big Creek Diversion Dam

Figure 45 shows the expected inundation zone if the Big Creek Diversion Dam were to fail. The following communities would be impacted by this failure:

- Polk City

Figure 45. Big Creek Diversion Dam Inundation Area



Based on the map above, approximately 28,167 people are estimated to be within the inundation zone of Big Creek Diversion Dam. Critical facilities which may be impacted by the failure of Big Creek Diversion Dam include:

Bridges – 5

Fire Stations – 1

Police Stations – 1

Waste Water Treatment Facilities – 1

Tier II Facilities – 0

Dam failures also pose a threat to residential, commercial, industrial and other non-critical properties within the planning area. The following table shows the parcel type, count, and assessed total value of property within the inundation zone of Big Creek Diversion Dam.

Table 35. Property Vulnerable to Failure of Big Creek Diversion Dam

Parcel Type	Parcel Count	Assessed Total Value
Government	317	$0
Residential	937	$372,042,405
Agricultural	56	$1,240,688
Commercial	40	$15,770,310
School	1	$0

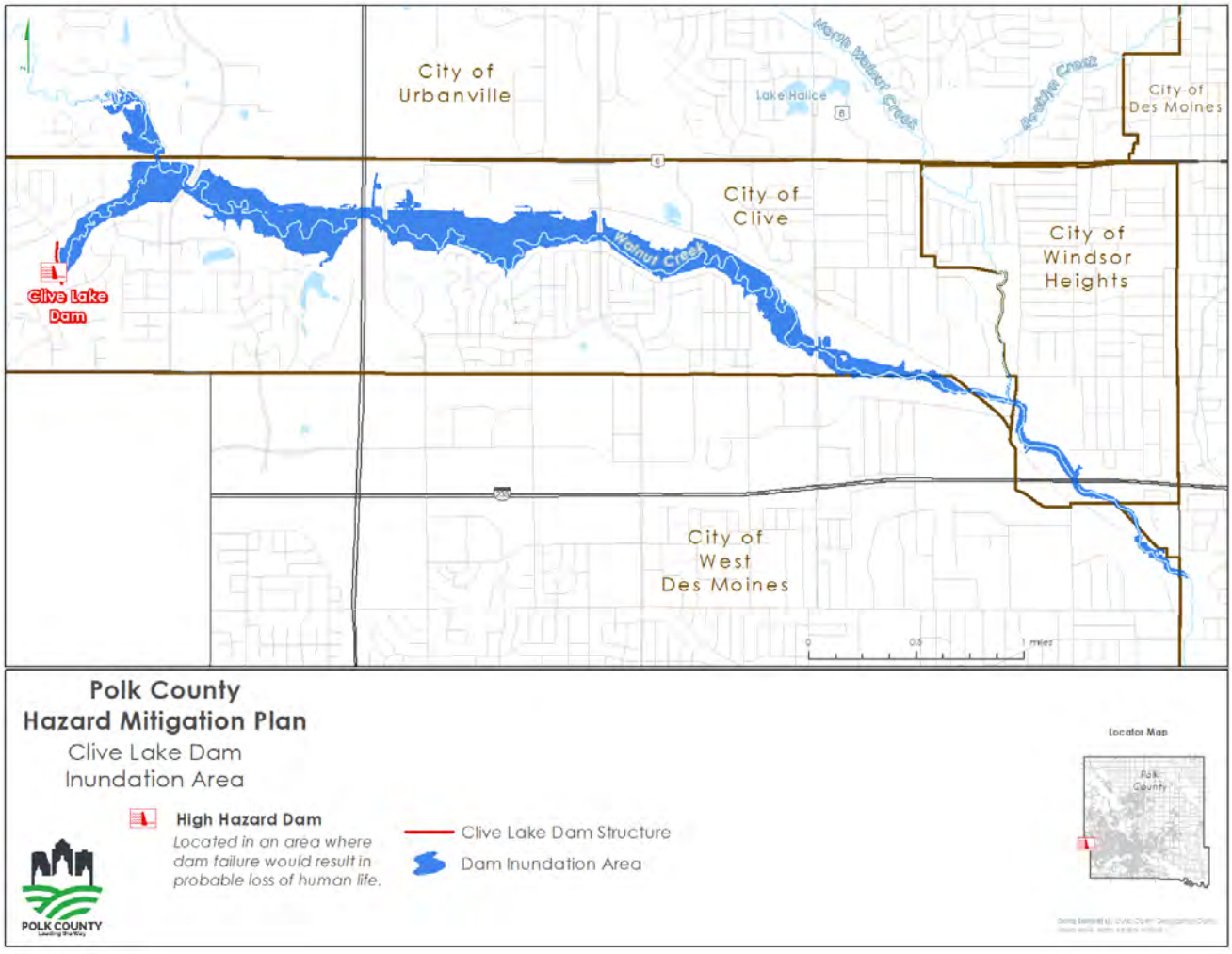
Clive Lake Dam

Figure 46 shows the expected inundation zone if the Clive Lake Dam were to fail. The following communities would be impacted by this failure:

- City of Clive
- City of Urbandale
- City of West Des Moines

- City of Windsor Heights

Figure 46. Clive Lake Dam Inundation Area



Based on the map above, approximately 30,472 people are estimated to be within the inundation zone of Clive Lake Dam. Critical facilities which may be impacted by the failure of Clive Lake Dam include:

Bridges - 6

Dam failures also pose a threat to residential, commercial, industrial and other properties within the planning area. The following table shows the parcel type, count, and assessed total value of property within the inundation zone of Clive Lake Dam.

Table 36. Property Vulnerable to Failure of Clive Lake Dam

Parcel Type	Parcel Count	Assessed Total Value

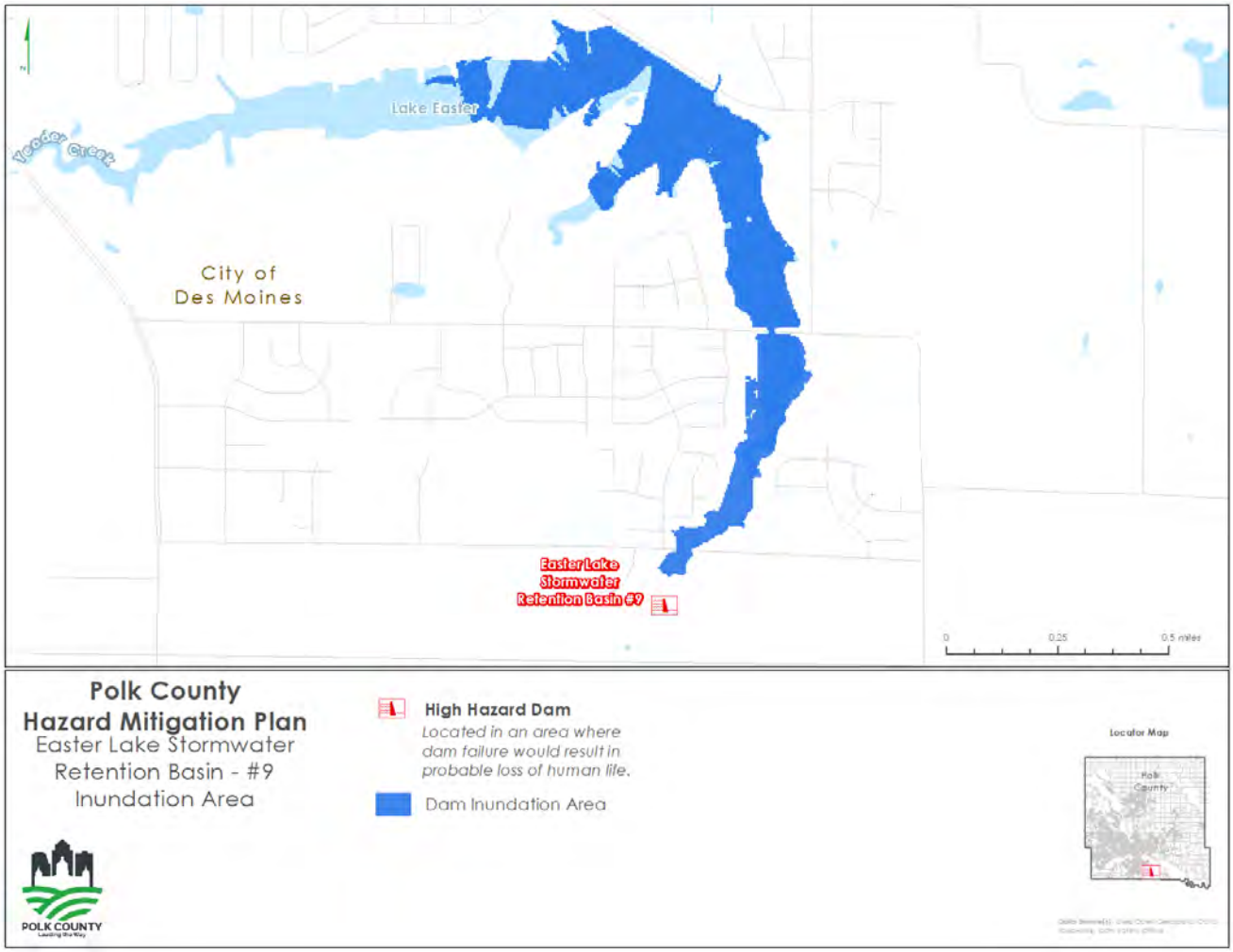
Commercial	12	$7,890,200
Government	61	$0
Residential	13	$6,630,210

Easter Lake Stormwater Retention Basin – Site 9

Figure 47 shows the expected inundation zone if Easter Lake Stormwater Retention Basin – Site 9 were to fail. The following communities would be impacted by this failure:

- City of Des Moines

Figure 47. Easter Lake Stormwater Retention Basin - Site 9 Inundation Area



Based on the map above, approximately 7,754 people are estimated to be within the inundation zone of Easter Lake Stormwater Retention Basin – Site 9. There are no critical facilities which would appear to be threatened by the failure of Easter Lake Stormwater Retention Basin – Site 9.

Dam failures also pose a threat to residential, commercial, industrial and other properties within the planning area. The following table shows the parcel type, count, and assessed total value of property within the inundation zone of Easter Lake Stormwater Retention Basin – Site 9.

Table 37. Property Vulnerable to Failure of Easter Lake Stormwater Retention Basin – Site 9

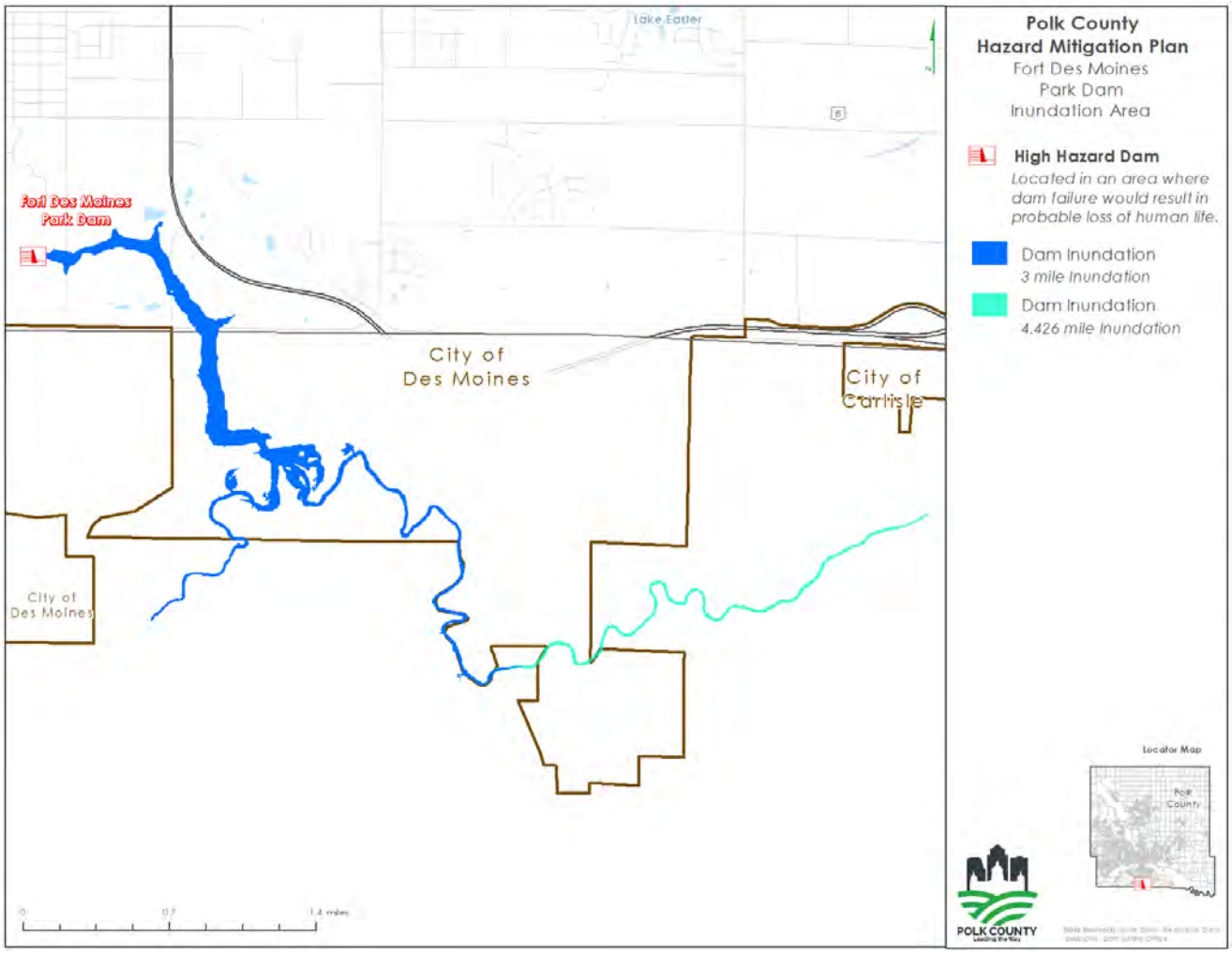
Parcel Type	Parcel Count	Assessed Total Value
Government	10	$0
Residential	1	$300

Fort Des Moines Park Dam

Figure 48 shows the expected inundation zone if the Fort Des Moines Dam were to fail. The following communities would be impacted by this failure:

- City of Des Moines

Figure 48. Fort Des Moines Park Dam Inundation Area



Based on the map above, approximately 7,107 people are estimated to be within the inundation zone of Fort Des Moines Park Dam. Critical facilities which may be impacted by the failure of Fort Des Moines Park Dam include:

Bridges – 2

Dam failures also pose a threat to residential, commercial, industrial and other properties within the planning area. The following table shows the parcel type, count, and assessed total value of property within the inundation zone of Fort Des Moines Park Dam.

Table 38. Property Vulnerable to Failure of Fort Des Moines Park Dam

Parcel Type	Parcel Count	Assessed Total Value
Agriculture	1	$2,200

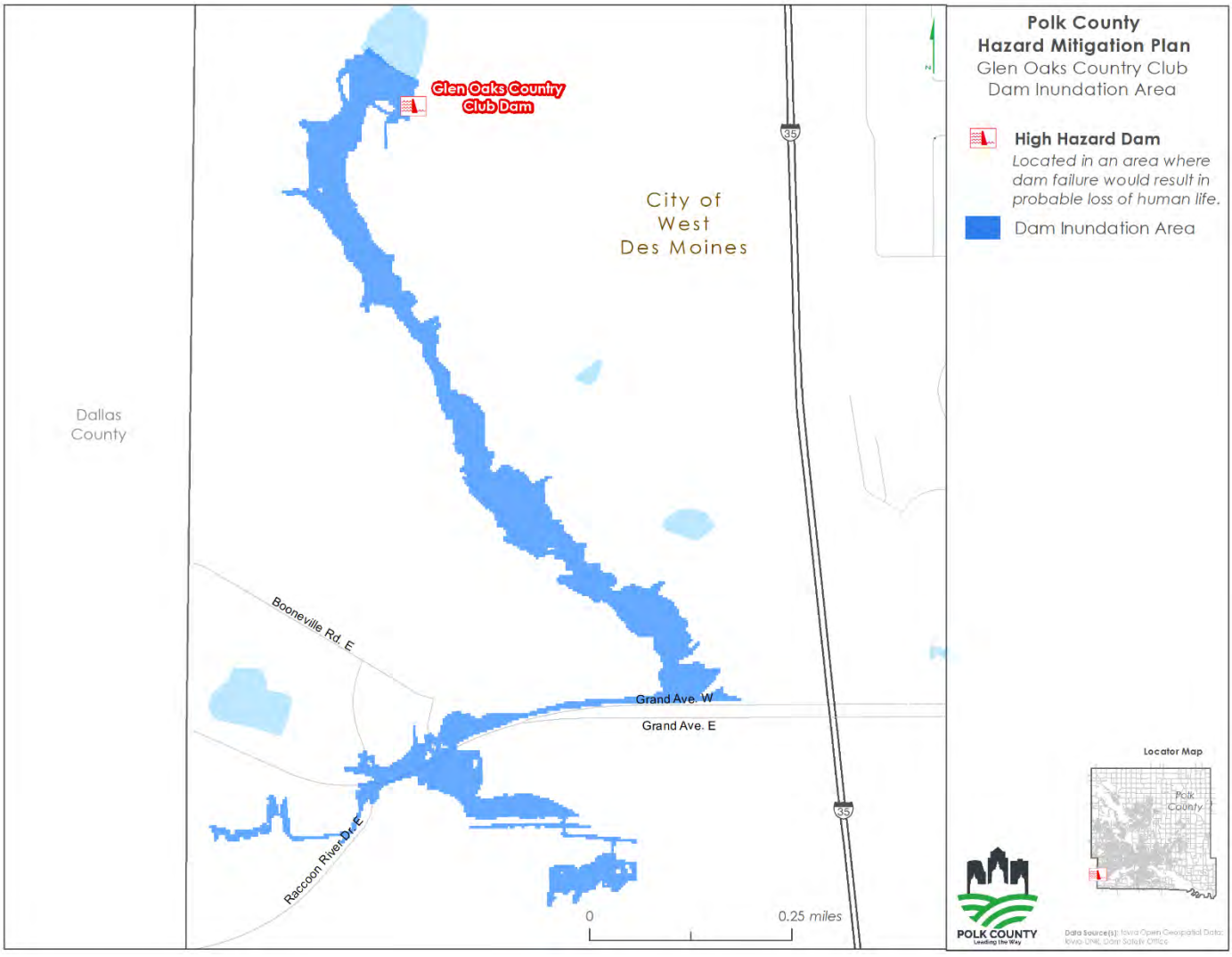
Commercial	1	$0
Government	3	$0
Residential	5	$1,132,500

Glen Oaks Country Club Dam

Figure 49 shows the expected inundation zone if the Glen Oaks Country Club Dam were to fail. The following communities would be impacted by this failure:

- City of West Des Moines

Figure 49. Glen Oaks Country Club Dam Inundation Area



Based on the map above, approximately 5,755 people are estimated to be within the inundation zone of Glen Oaks Country Club Dam. There are no critical facilities which have been identified within the inundation area of Glen Oaks Country Club Dam.

Dam failures pose a threat to residential, commercial, industrial and other properties within the planning area. The following table shows the parcel type, count, and assessed total value of property within the inundation zone of Glen Oaks Country Club Dam.

Table 39. Property Vulnerable to Failure of Glen Oaks Country Club Dam

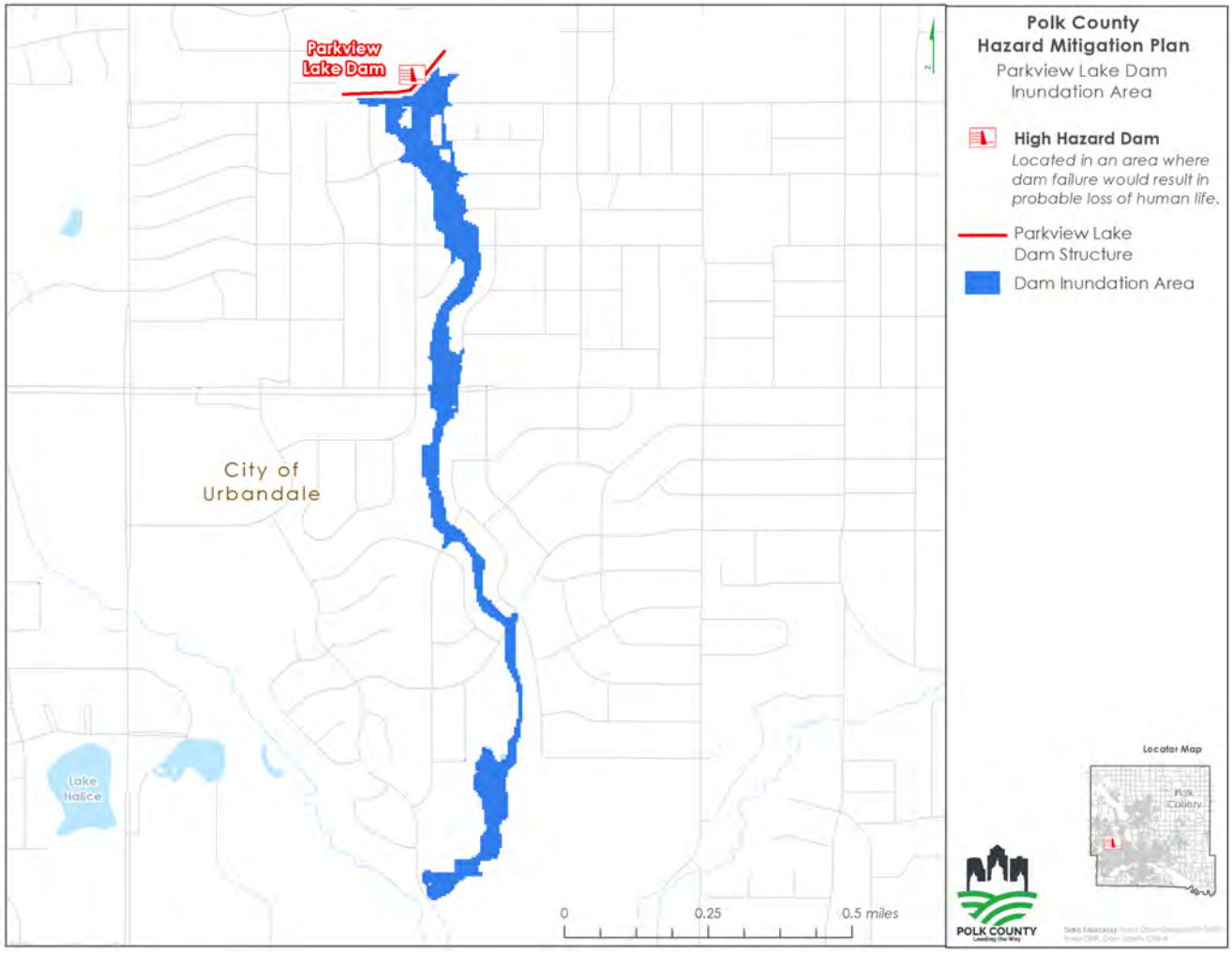
Parcel Type	Parcel Count	Assessed Total Value
Commercial	1	$704,000
Government	6	$0
Residential	3	$638,425

Parkview Lake Dam

Figure 50 shows the expected inundation zone if the Parkview Lake Dam were to fail. The following communities would be impacted by this failure:

- City of Urbandale

Figure 50. Parkview Lake Dam Inundation Area



Based on the map above, approximately 11,710 people are estimated to be within the inundation zone of Parkview Lake Dam. There are no critical facilities identified within the inundation area of Parkview Lake Dam.

Dam failures pose a threat to residential, commercial, industrial and other properties within the planning area. The following table shows the parcel type, count, and assessed total value of property within the inundation zone of Parkview Lake Dam.

Table 40. Property Vulnerable to Failure of Parkview Lake Dam

Parcel Type	Parcel Count	Assessed Total Value
Commercial	1	$64,600

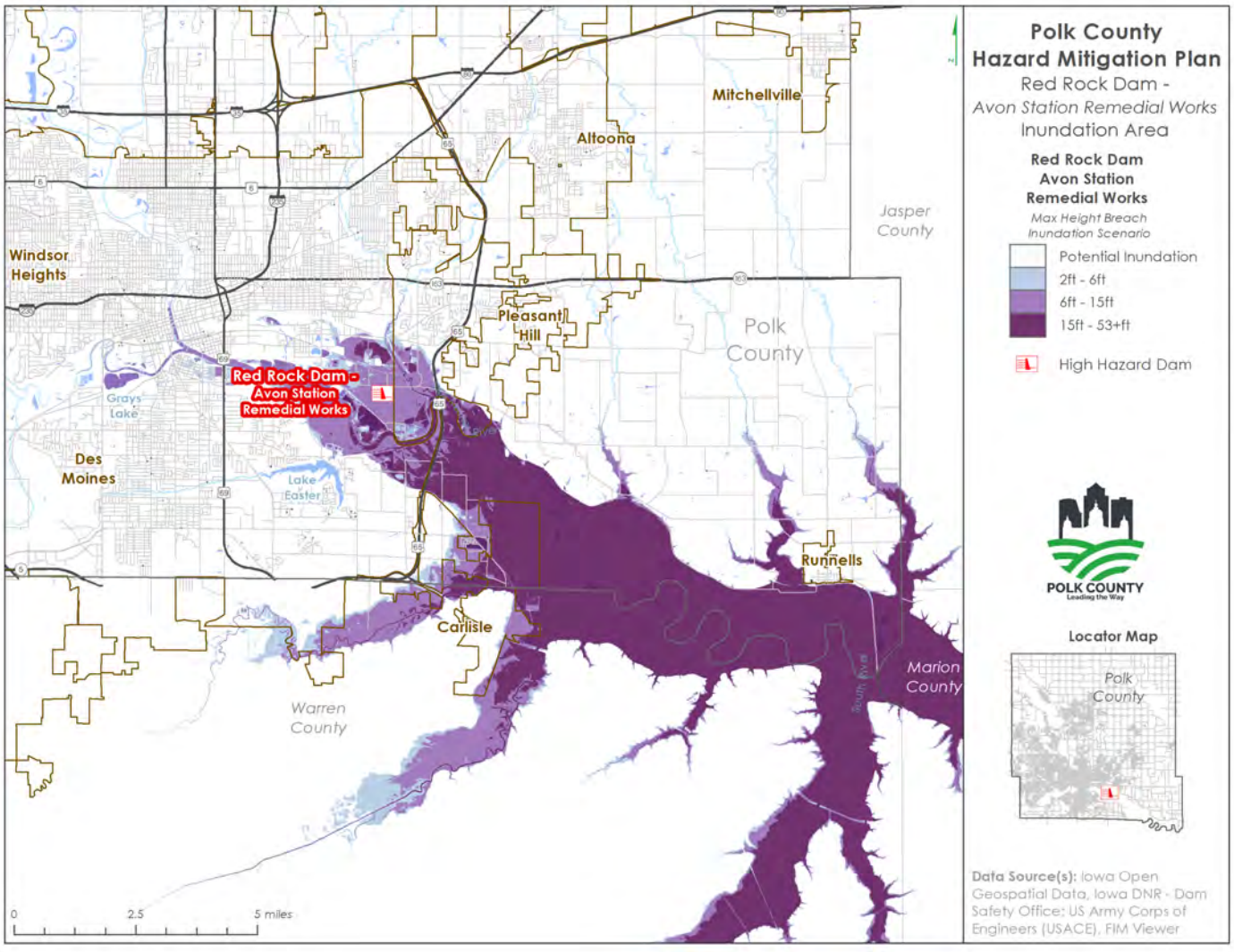
Government	6	$0
Residential	38	$8,861,000

Red Rock Dam – Avon Station Remedial Works

Figure 51 shows the expected inundation zone if the Red Rock – Avon Station Remedial Dam were to fail. The following communities would be impacted by this failure:

- City of Des Moines
- City of Runnells

Figure 51. Red Rock Dam - Avon Station Remedial Works



Based on the map above, approximately 68,718 people are estimated to be within the inundation zone of Red Rock – Avon Station Remedial Dam. Critical facilities which may be impacted by the failure of Red Rock – Avon Station Remedial Dam include:

Bridges – 22

Electric Power Facility - 2

Railway Facility - 1

Waste Water Facility - 1

Tier II Facilities - 20

Dam failures also pose a threat to residential, commercial, industrial and other properties within the planning area. The following table shows the parcel type, count, and assessed total value of property within the inundation zone of Red Rock – Avon Station Remedial Dam.

Table 41. Property Vulnerable to Failure of Red Rock -- Avon Station Remedial Dam

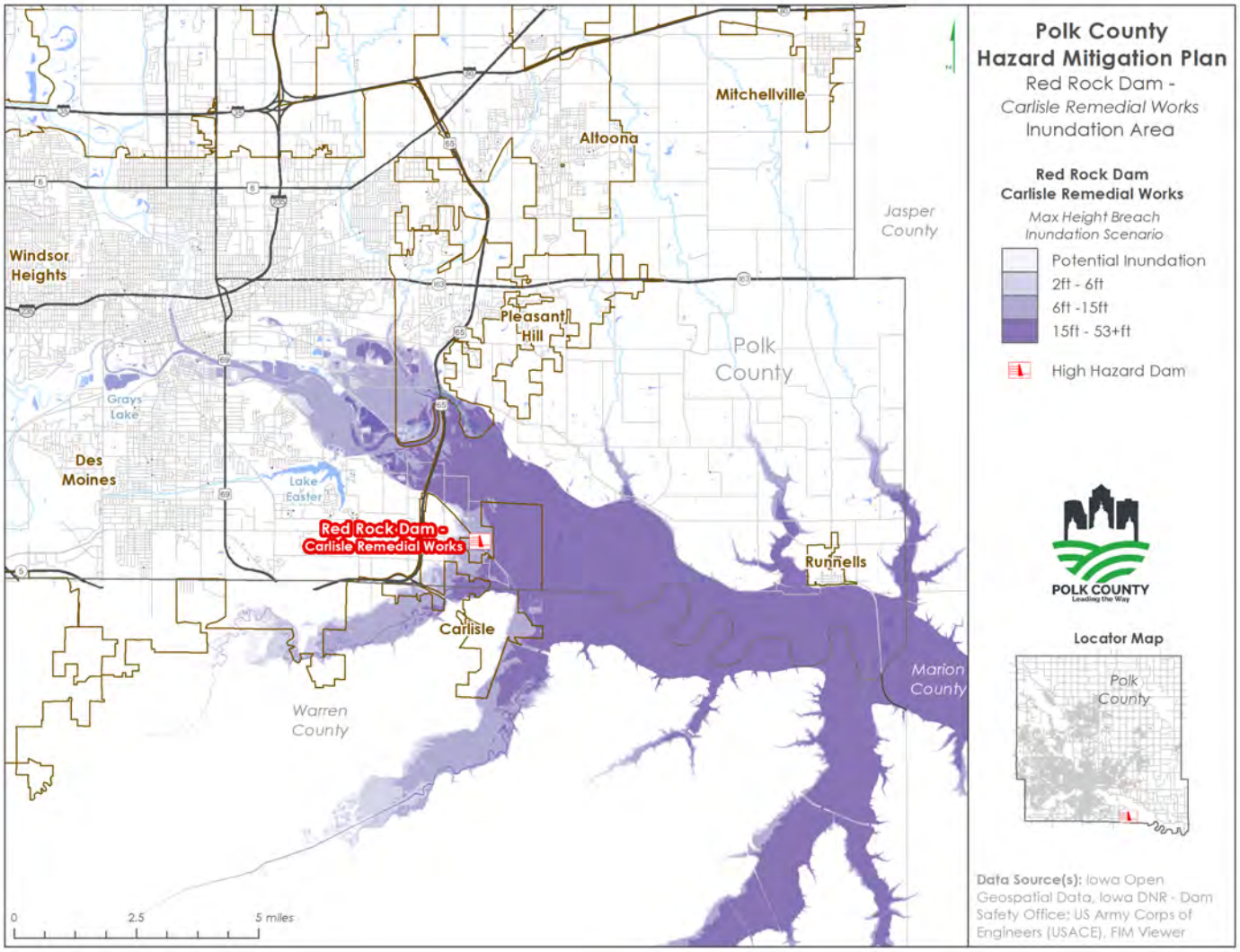
Parcel Type	Parcel Count	Assessed Total Value
Agriculture	221	$10,541,720
Commercial	126	$54,572,089
Government	673	$0
Industrial	53	$85,976,670
Residential	720	$99,569,340
Utility	76	$0

Red Rock – Carlisle Remedial Dam

Figure 52 shows the expected inundation zone if the Red Rock – Carlisle Remedial Dam were to fail. The following communities would be impacted by this failure:

- City of Des Moines
- City of Runnells

Figure 52. Red Rock Dam - Carlisle Remedial Works



Based on the map above, approximately 68,718 people are estimated to be within the inundation zone of Red Rock – Carlisle Remedial Dam. Critical facilities which may be impacted by the failure of Red Rock – Carlisle Remedial Dam include:

Bridges – 22

Electric Power Facility - 2

Railway Facility - 1

Waste Water Facility - 1

Tier II Facilities – 20

Dam failures also pose a threat to residential, commercial, industrial and other properties within the planning area. The following table shows the parcel type, count, and assessed total value of property within the inundation zone of Red Rock – Carlisle Remedial Dam.

Table 42. Property Vulnerable to Failure of Red Rock – Carlisle Remedial Dam

Parcel Type	Parcel Count	Assessed Total Value
Agriculture	221	$10,541,720
Commercial	126	$54,572,089
Government	673	$0
Industrial	53	$85,976,670
Residential	720	$99,569,340
Utility	76	$0

Saylorville Dam

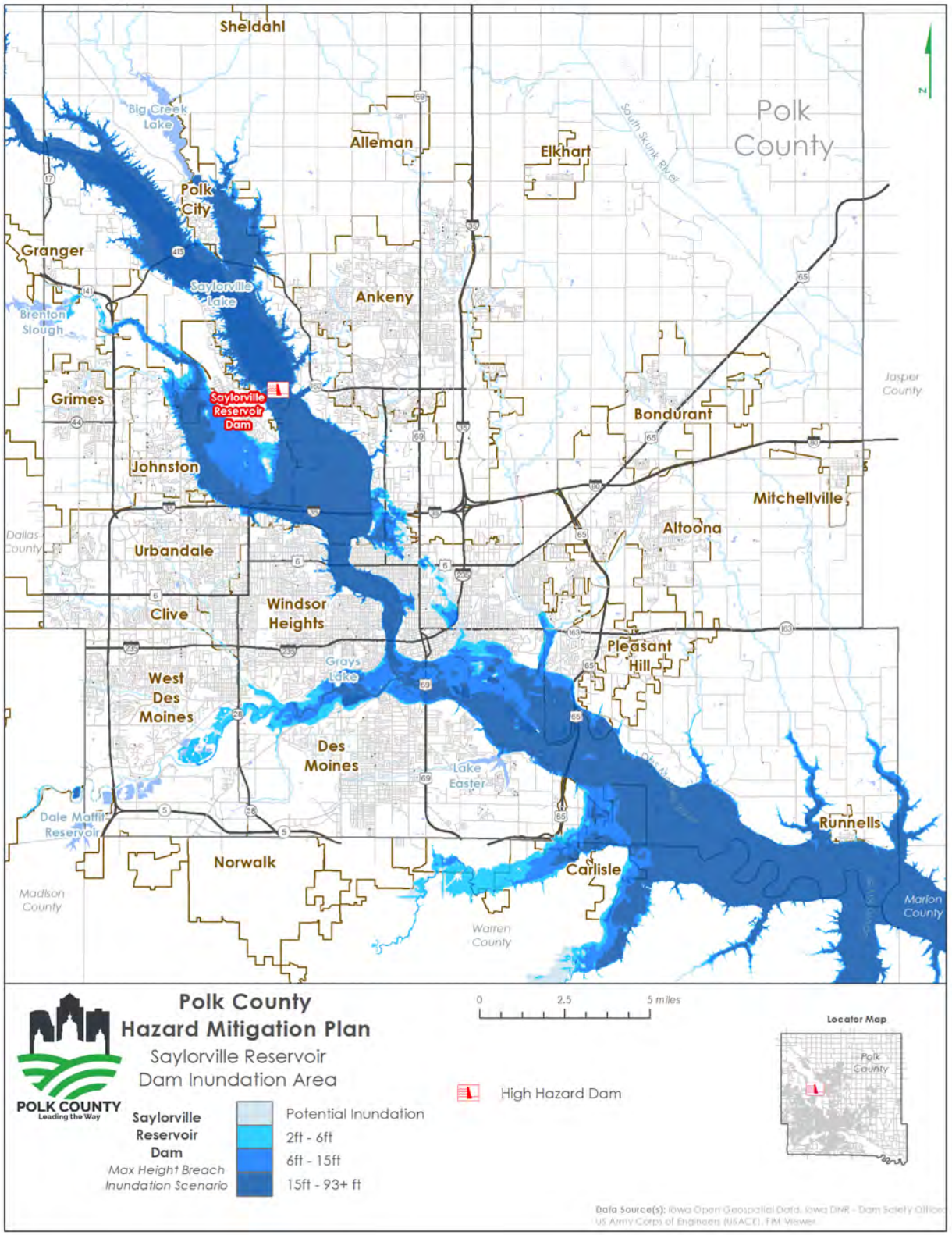
Figure 53 shows the expected inundation zone if Saylorville Dam were to fail. The following communities would be directly impacted by this failure:

- Des Moines
- Grimes
- Johnston
- Polk City
- Runnells
- Urbandale
- West Des Moines

In addition to the cities which are directly in the inundation zone, a significant breach of Saylorville dam is anticipated to have repercussions for all jurisdictions in Polk County, as well as surrounding and downstream communities. Jurisdictions in Polk County which remain dry would likely

be asked to help support recovery efforts by housing displaced individuals and hosting emergency operations centers.

Figure 53. Saylorville Dam Inundation Area



Based on the map above, approximately 197,431 people – approximately 40% of the County's 2020 population – are estimated to be within the inundation zone of Saylorville Dam. Critical facilities which may be impacted by the failure of Saylorville Dam include:

Bridges – 116

Bus Facility - 1

Communications - 4

Electric Power Facility - 4

EOC - 1

Fire Stations - 4

Government Facility - 1

Medical Care Facility - 1

Parks - 3

Police Stations - 5

Potable Water Facility - 1

Railway Facility - 5

Schools - 7

Waste Water Facility – 3

Tier II Facilities – 64

Dam failures also pose a threat to residential, commercial, industrial and other properties within the planning area. The following table shows the parcel type, count, and assessed total value of property within the inundation zone of Saylorville Dam.

Table 43. Property Vulnerable to Failure of Saylorville Dam

Parcel Type	Parcel Count	Assessed Total Value
Agriculture	420	$24,873,416
Commercial	1719	$1,364,739,860
Government	4,126	$0
Industrial	301	$268,552,240

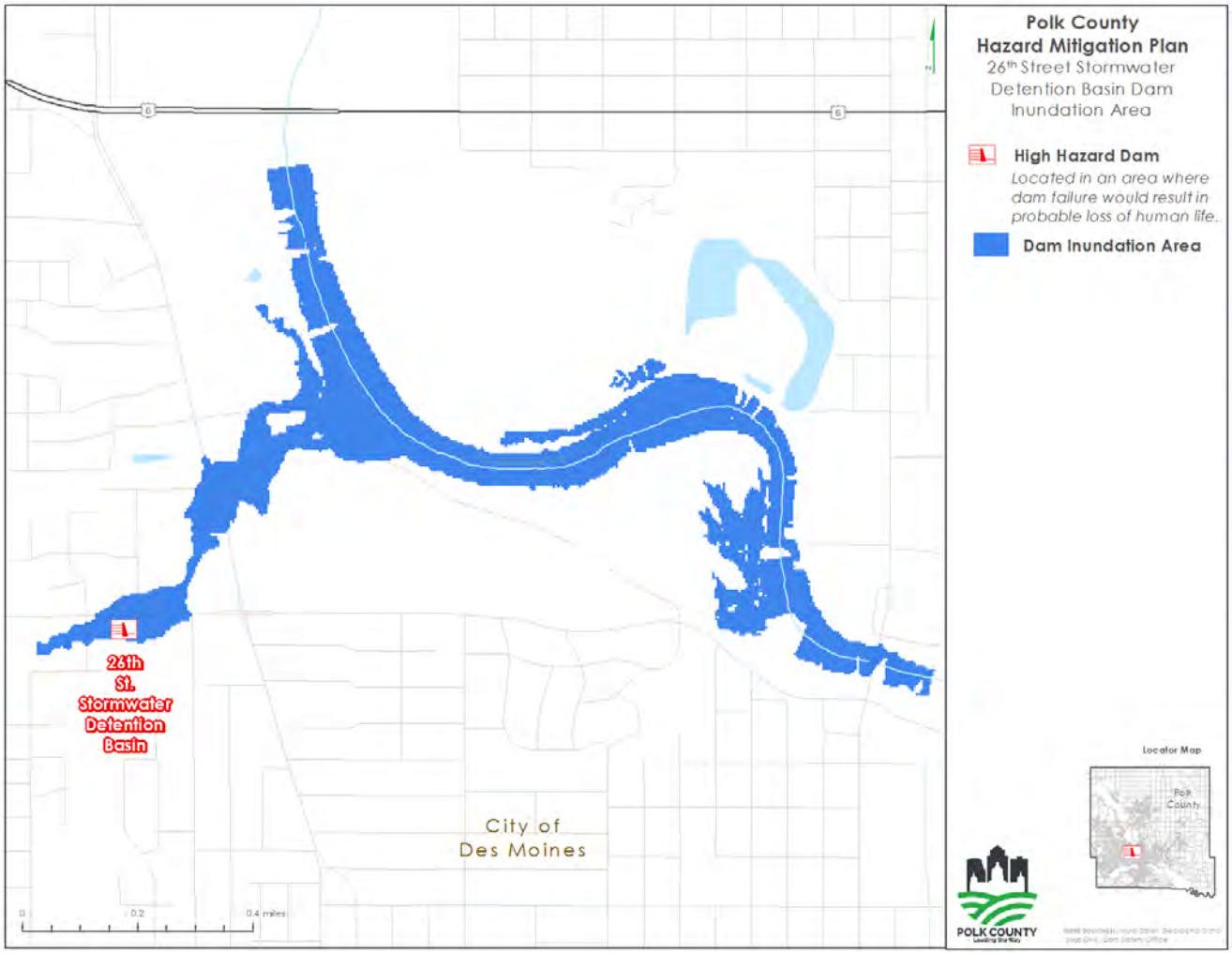
Residential	10,012	$1,973,150,940
School	18	$0
Utility	285	$0

Twenty-Sixth Street Stormwater Detention Basin

Figure 54 shows the expected inundation zone if the Twenty-Sixth Street Stormwater Detention Basin were to fail. The following communities would be impacted by this failure:

- City of Des Moines

Figure 54. Twenty-Sixth Street Stormwater Detention Basin Dam Inundation Area



Based on the map above, approximately 18,027 people are estimated to be within the inundation zone of Twenty-Sixth Street Stormwater Detention Basin. There are no critical facilities identified within the inundation area of Twenty-Sixth Street Stormwater Detention Basin.

Dam failures can pose a threat to residential, commercial, industrial and other properties within the planning area. The following table shows the parcel type, count, and assessed total value of property within the inundation zone of Twenty-Sixth Street Stormwater Detention Basin.

Table 44. Property Vulnerable to Failure of Twenty-Sixth Street Stormwater Detention Basin

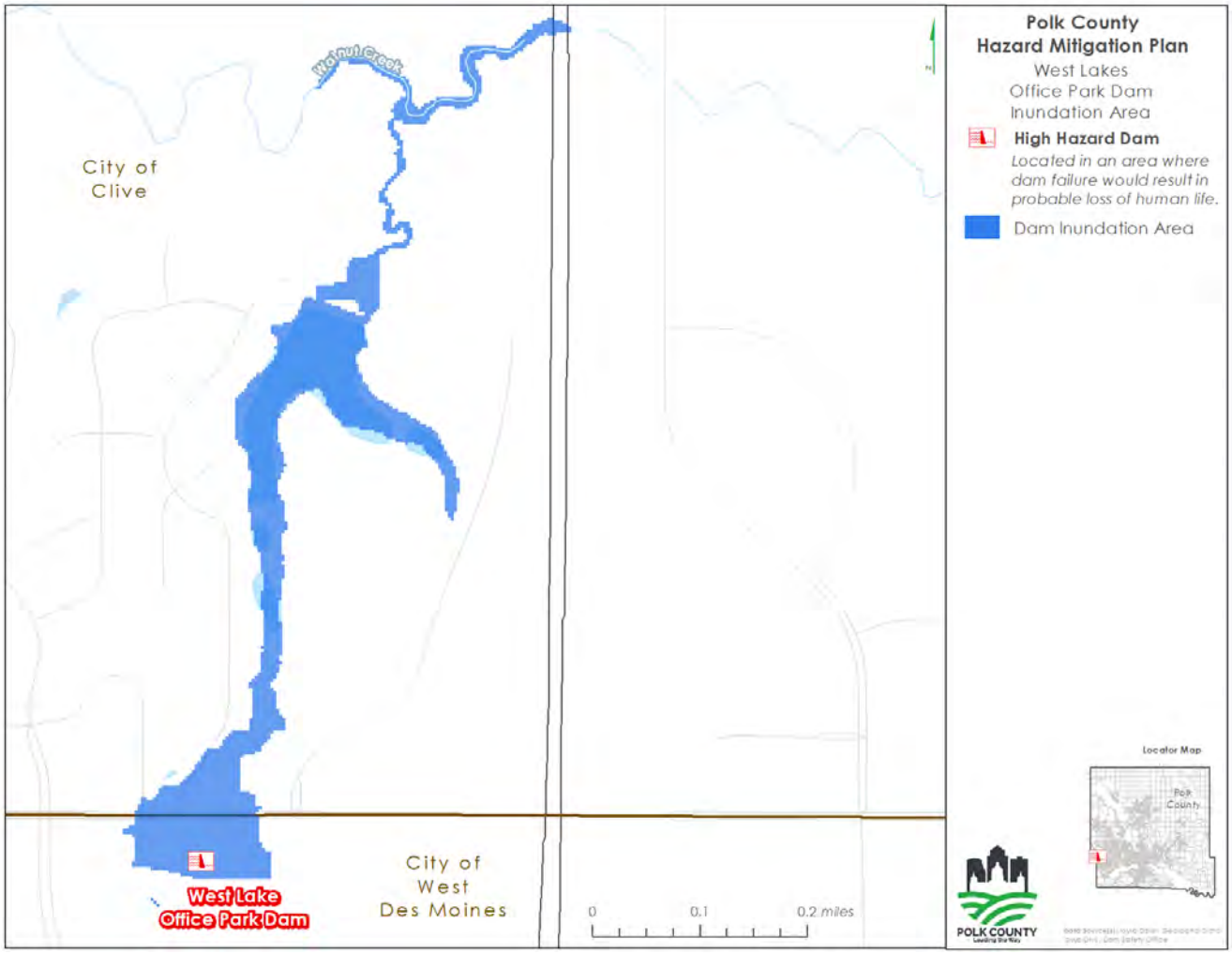
Parcel Type	Parcel Count	Assessed Total Value
Commercial	10	$1,901,100
Government	19	$0
Residential	2	$367,500
School	1	$0

West Lake Office Park Dam

Figure 55 shows the expected inundation zone if the West Lake Office Park Dam were to fail. The following communities would be impacted by this failure:

- City of Clive
- City of West Des Moines

Figure 55. West Lake Office Park Dam Inundation Area



Based on the map above, approximately 6,625 people are estimated to be within the inundation zone of West Lake Office Park Dam. There are no critical facilities which have been identified as being located within the inundation area of West Lake Office Park Dam.

Dam failures also pose a threat to residential, commercial, industrial and other properties within the planning area. The following table shows the parcel type, count, and assessed total value of property within the inundation zone of West Lake Office Park Dam.

Table 45. Property Vulnerable to Failure of West Lake Office Park Dam

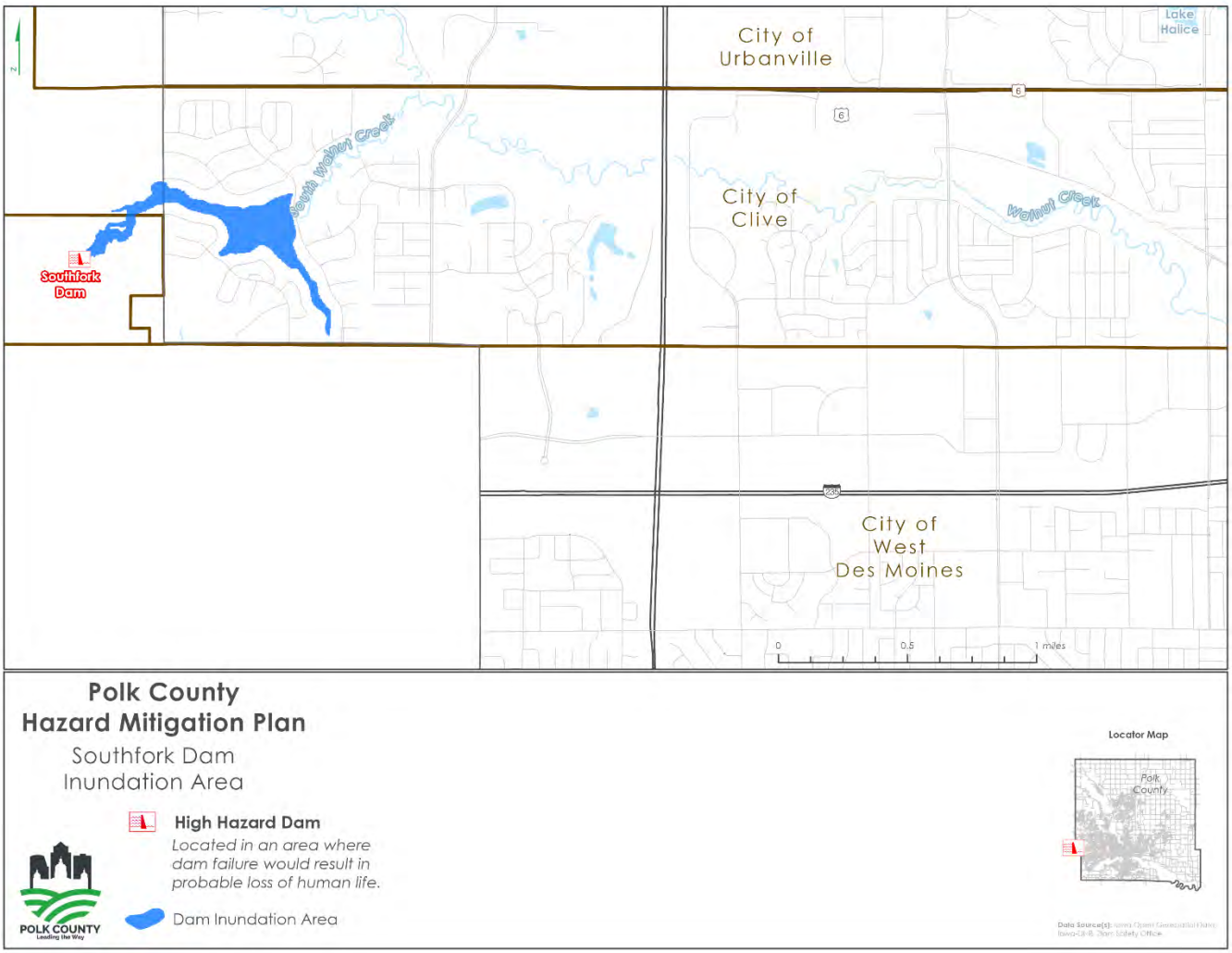
Parcel Type	Parcel Count	Assessed Total Value
Government	3	$0

Residential	4	$11,780

Southfork Dam

The Southfork Dam is one of the upstream high hazard dams not located within Polk County, but it is profiled here to convey the vulnerability of the City of Clive (a CRS participant) to failure of this dam. As such, this dam (and information about the population and facilities vulnerable to its failure) are not included in county-level summary data or mapping located elsewhere in the plan. Figure 56 shows the Southfork Dam's mapped inundation zone.

Figure 56. Southfork Dam Inundation Area



Approximately 3,628 people are estimated to be within the inundation zone of Southfork Dam. There are no critical facilities which have been identified as being located within the inundation area of Southfork Dam.

Dam failures also pose a threat to residential, commercial, industrial and other properties within the planning area. The following table shows the parcel type, count, and assessed total value of property within the inundation zone of Southfork Dam. These figures are limited to the geographic boundaries Polk County (for which parcel data was available during the update of this plan), and do not include potential damages outside of the county if this dam were to fail.

Table 46. Property Vulnerable to Failure of Southfork Dam

Parcel Type	Parcel Count	Assessed Total Value
Government	1	$0
Residential	17	$2,028,700

HHPD Grant Eligible Dams

Section 5006 of the Water Infrastructure Improvements for the Nation Act provides technical, planning, design, and construction assistance in the form of grants for rehabilitation of eligible high hazard potential dams. The Rehabilitation of High Hazard Potential Dams (HHPD) Grant awards provide technical, planning, design and construction assistance in the form of grants for rehabilitation of eligible high hazard potential dams. According to FEMA, to be eligible for HHPD funding, a dam must:

- Be non-federal
- Be located in a state/territory with a dam safety program
- Be classified as “high hazard potential” by the state/territory dam safety agency in the state/territory in which the dam is located
- Have an Emergency Action Plan (EAP) approved state/territory dam safety program or is in conformance with state/territory law and pending approval by the relevant state/territory dam safety agency
- Fail to meet minimum state/territory dam safety standards and pose an unacceptable risk to the public

Dams are not eligible for HHPD funding if they are:

- Federally owned dams
- A licensed hydroelectric dam under a dam a hydropower project with an authorized installed capacity of greater than 1.5 megawatts
- Dams built under the authority of the U.S. Secretary of Agriculture

As of the writing of this 2024 plan update, the National Inventory of Dams considers one high hazard dam in Polk County – the Glen Oaks Country Club Dam – to be in “poor” condition, which may make it eligible for HHPD funding. However, the Iowa DNR Dam Inventory database identifies the

condition of Glen Oaks Country Club Dam as “satisfactory” with the latest inspection occurring in October 2023. Neither the Iowa DNR nor the National Inventory of Dams consider any high hazard dams in Polk County to be in “unsatisfactory” condition. However, as dams are routinely inspected and future development continues to occur, other dams may be reclassified as high hazard, and existing high hazard dams may deteriorate in condition.

Future Development

Future development located downstream from dams in floodplains or inundation zones would increase vulnerability to this hazard. As described in the flood hazard section, increased development upstream reduces permeable surfaces to absorb water runoff, increasing the volume of water entering river systems, and potentially increasing the likelihood of flooding which can cause dam failure.

Climate Change

Increased frequency of precipitation and precipitation extremes leading to flooding could cause additional stress on dam structures.

Hazard Risk Score

Table 47. Dam Failure Probability and Health Impact Ratings

Health Severity	Community Impact	Public Health System Impact	Healthcare System Impact	Total Health Hazard Score	Probability
3	1	1	2	7	Unlikely

3.3.6 DROUGHT

3.3.6.1 DESCRIPTION

Drought is generally defined as a condition of moisture levels significantly below normal for an extended period of time over a large area that adversely affects plants, animal life, and humans. There are five types of drought conditions identified by the National Oceanic and Atmospheric Administration:

Meteorological drought is defined on the basis of the degree of dryness (in comparison to some “normal” or average amount) and the duration of the dry period. A meteorological drought must be considered as region-specific since the atmospheric conditions that result in deficiencies of precipitation are highly variable from region to region.

Hydrological drought is associated with the effects of periods of precipitation (including snowfall) shortfalls on surface or subsurface water supply (e.g., streamflow, reservoir and lake levels, ground water). The frequency and severity of hydrological drought is often defined on a watershed or river basin scale. Although all droughts originate with a deficiency of precipitation, hydrologists are more concerned with how this deficiency plays out through the hydrologic system. Hydrological droughts are usually out of phase with or lag the occurrence of meteorological and agricultural droughts. It takes longer for precipitation deficiencies to show up in components of the hydrological system such as soil

moisture, streamflow, and ground water and reservoir levels. As a result, these impacts are out of phase with impacts in other economic sectors.

Agricultural drought focus is on soil moisture deficiencies, differences between actual and potential evaporation, reduced ground water or reservoir levels, and so forth. Plant water demand depends on prevailing weather conditions, biological characteristics of the specific plant, its stage of growth, and the physical and biological properties of the soil.

Socioeconomic drought refers to when physical water shortage begins to affect people.

Ecological Drought occurs when driven beyond their capacity to adapt, ecosystems may cross critical thresholds, resulting in temporary or permanent alteration in their composition, structure, and/or functioning at local or landscape scales. The vulnerability of natural systems to withstand or adapt to drought disturbances depends on the sensitivity of the system, its exposure to the hazard, and its capacity to adapt and recover from drought.

All five of these terms play a significant role as it relates to impacts during a drought in Polk County, Iowa. A meteorological drought is the easiest to determine based on rainfall data and is an easier drought to monitor from rain gauges and reports. A hydrological drought means that stream and river levels are low, which also has an impact for surface water and ground water irrigators. In addition, in-stream discharges that fall below a pre-required level also place the State in regulatory difficulty with U.S. Fish and Wildlife and with neighboring states over cross-border flowage rights. An agricultural drought represents difficulty for Iowa's agricultural-based economy and is also relatively easy to monitor based on crop viabilities for different regions.

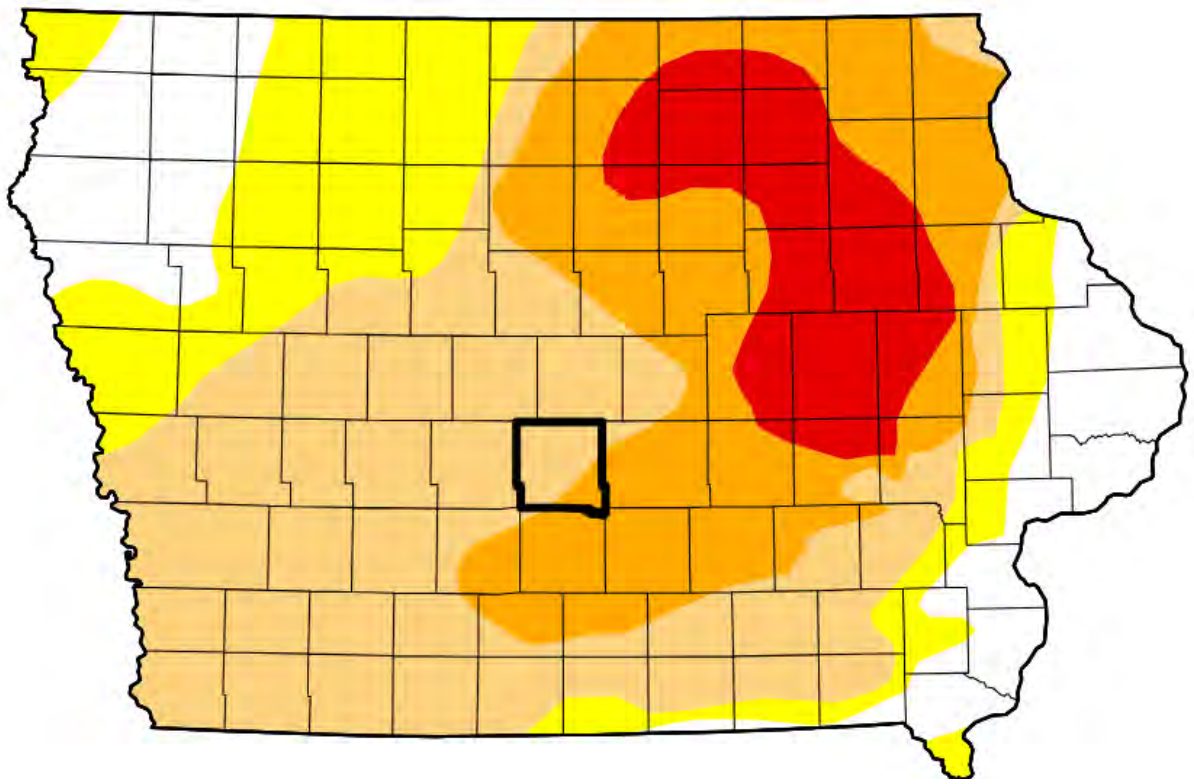
The National Drought Mitigation Center (NDMC) located at the University of Nebraska in Lincoln provides a clearinghouse for information on the effects of drought, based on reports from media, observers and other sources. The NDMC categorizes impacts of drought as economic, environmental, or social. Many economic impacts occur in agriculture and related sectors, including forestry and fisheries, because of the reliance of these sectors on surface and subsurface water supplies. In addition to obvious losses in yields in both crop and livestock production, drought is associated with increases in insect infestations, plant disease and wind erosion. Droughts also bring increased problems with insects and disease to forests and reduce growth. The incidence of forest and range fires increases substantially during extended droughts, which in turn places both human and wildlife populations at higher levels of risk. Income loss is another indicator used in assessing the impacts of drought because so many sectors are affected.

Although drought is not predictable, long-range outlooks may indicate an increased chance of drought, which can serve as a warning. A drought period can last for months, years, or even decades. It is rarely a direct cause of death, though the associated heat, dust and stress can all contribute to increased mortality.

3.3.6.2 LOCATION

The area affected by drought is virtually always larger than Polk County. Therefore, the entirety of the planning area and the multiple jurisdictions within Polk County are considered equally vulnerable to drought. Like other counties in Iowa, agriculture is an important component of the overall prosperity of Polk County, and agriculture is particularly susceptible to the impacts of drought. However, drought should not be perceived as a hazard which only threatens rural areas -- drought can strain water availability and create hardships for those in urban centers like the Des Moines metropolitan area. As shown in Figure 57, the entirety of Polk County is experiencing drought as of April 2024.

Figure 57. U.S. Drought Monitor Map of Iowa on April 11, 2024



Note: The perimeter of Polk County is bolded for ease of identification

3.3.6.3 EXTENT

The U.S. Drought Monitor identifies areas in drought and categorizes them by intensity. There are six different categories utilized by the U.S. Drought Monitor to convey different drought intensities, and these categories are shown in the table below.

Table 48. U.S. Drought Monitor Event Categories

Category	Description	Example Percentile Range for Most Indicators	Values for Standard Precipitation Index and Standardized Precipitation-Evapotranspiration Index
None	Normal or wet conditions	30.01 or above	-0.49 or above
D0	Abnormally dry	20.01 to 30.00	-0.5 to -0.79
D1	Moderate drought	10.01 to 20.00	-0.8 to -1.29
D2	Severe drought	5.01 to 10.00	-1.3 to -1.59
D3	Extreme drought	2.01 to 5.00	-1.6 to -1.99
D4	Exceptional drought	0.00 to 2.00	-2.0 or less

According to the U.S. Drought Monitor, the possible impacts associated with abnormally dry and drought conditions are:

(D0) Abnormally Dry

- Short-term dryness slowing planting, growth of crops, or pastures
- Lingering water deficits
- Pastures or crops slow to recover

(D1) Moderate Drought

- Some damage to crops, pastures
- Streams, reservoirs, or wells low, some water shortages developing or imminent
- Voluntary water-use restrictions may be requested

(D2) Severe Drought

- Crop or pasture losses likely
- Water shortages are common
- Water restrictions may be imposed

(D3) Extreme Drought

- Major crop or pasture losses
- Widespread water shortages or usage restrictions

(D4) Exceptional Drought

- Exceptional and widespread crop/pasture losses
- Shortages of water in reservoirs, streams, and wells creating water emergencies

3.3.6.4 PREVIOUS OCCURRENCES

Drought occurs periodically in Iowa with the most severe in historical times occurring in the 1930's. Other major droughts, usually characterized by deficient rainfall combined with unusually high summer temperatures, occurred in 1886, 1893-1894, 1901, 1954-1956, 1976–1977, 1988–1989, 1999, 2000, 2003, 2005, 2006, 2011-2012, 2013-2014, 2017, 2020, 2021-2024. Although droughts are not the spectacular weather events that floods, blizzards, and tornadoes can be, historically they have had severe economic consequences for both Polk County and the State of Iowa.

According to the National Drought Mitigation Center's Drought Impact Reporter, during the 14-year period from January 2011 through April 2024, Polk County was included in 42 listed drought impacts. These impacts reflect acute consequences of droughts rather than unique drought events, and multiple impacts can arise from a single drought. The impacts of drought in Polk County are shown in Table 49.

Table 49. Drought Impacts in Polk County 2011-2024

Impact Category	Instances in Polk County
Agriculture	8
Business and Industry	1
Energy	0
Fire	1
Plants & Wildlife	4
Relief, Response, & Restrictions	8
Society & Public Health	4
Tourism & Recreation	2
Water Supply & Quality	14

Total	42

In addition to the drought impacts documented by the National Drought Mitigation Center, the National Centers for Environmental Information (NCEI) has its own record of drought in Polk County. The NCEI data, which goes back to 1999, identifies 27 drought events impacting Polk County over the past 25 years. Information regarding the financial impacts of these events is not available for events which have occurred since 2020, but droughts impacting Polk County between 1999 and 2019 resulted in more than $110,300,000 in damages, primarily to crops. Descriptions of previous drought events that affected Polk County are provided below. These descriptions come from the NCEI and the National Drought Mitigation Center.

January 3, 2024—Corn and soybean farmers in Polk County have been reported switching to alternative drought resistant crops and tolerant corna and soybean breeds to survive the mild droughts that they've faced the past few years. However; such hybrid seeds or drought tolerant breeds have become scarce in the County and have been difficult to find which has greatly impacted the corn and soybean production in Polk County.

November 30, 2023-- Iowa officials were preparing for conditions to worsen by aiming to make portable water treatment plants available, streamlining permitting so towns can drill additional wells and deciding how best to get water tankers to dry cities and towns, should the measures be needed. The Iowa DNR, Homeland Security, the Department of Agriculture and other agencies were holding meetings on the state's response to continued drought.

August 1-30, 2013—Serious drought conditions gripped the state through the summer months. Initial sub-soil moisture was good at the beginning of the growing season. The recharged soil was sufficient to maintain the crops through a good part of the summer. Rainfall remained low through August as well and crops deteriorated rapidly under the warmer than normal and very dry conditions. Rainfall for the summer was between 1/3 and 2/3 of normal across much of the Des Moines CWA. A large part of the CWA received under 5% of normal rainfall in August, with most areas under 20%. Crop loss through the month was around 10%. This translated to over $600 million in crop loss for the corn crop, and about $350 million for soybeans.

May 23, 2013—The Des Moines Water Works, serving approximately 500,000 people, asked metro area customers, both residential and commercial, to use Wise Water Best Practices. The drought conditions from 2012 caused a large nitrate concentration to be found in the Raccoon and Des Moines Rivers and thus Des Moines Water Works could not pull water from either river.

November 11, 2012— Drought drove corn prices to record highs this year. As a result, Ethanol producers in the U.S. lost $0.36 per gallon produced compared to sales the year before.

October 31, 2012—The drought trimmed hay production by a third to a half in most parts of the State. Many cattlemen began feeding hay much earlier than usual because pastures did not grow back well.

October 12, 2012—Iowa State University agriculture experts advised farmers to test forages for quality this fall because variable nutrient levels and high nitrate levels can occur in forages grown during drought.

September 25, 2012— Polk County was in Severe and Extreme Drought conditions.

July 26, 2012—The Governor issued a disaster emergency proclamation that allowed for the suspension of state laws and regulations affecting the transportation of hay and straw. In the statement, it says, "the drought has destroyed or depleted sources of these products that are necessary for livestock production and feed."

July 17, 2012—Iowa foresters said that trees across the State were dropping their leaves early, due to the drought, while smaller trees may not be able to survive. Also the Iowa Department of Natural Resources documented massive fish kills as streams dwindled and heat decreased the water's oxygen content.

July 1-30, 2012—Very warm and dry weather that began in the spring continued into the summer. Rainfall was in short supply across the State. Much of the State recorded less than 50 percent of normal rainfall for July. Rapid deterioration of the corn and soybean crop took place with several periods of temperatures in excess of 100 degrees. By the end of July, officials estimated that 32 percent of the corn yield had been lost to the drought. At the current price, the loss total was in excess of $4.5 billion state-wide.

2012—Governor Branstad created a website dedicated to the 2012 Iowa drought as a resource for all Iowans. This year's drought damages surpassed that of 1988.

January 1, 2011 to March 31, 2012—Drought in 2011 led ranchers to sell cattle leading to the lowest cattle inventory in the U.S. since 1952, according to the U.S. Department of Agriculture. Beef and dairy farmers owned 90.77 million head of cattle on January 1, 2012, which were 2.1 percent fewer cattle than in January 2011. Drought forced many ranchers in the South to sell their livestock because it was more economical to sell than to feed them.

August 2, 2011 to December 13, 2011—The U.S. Drought Monitor reported the drought conditions as Abnormally Dry in August, Moderate Drought in November and Abnormally Dry in December for Polk County.

September 15, 2006 to October 20, 2006—Agriculture Secretary Mike Johanns lengthened the time allowed for emergency livestock grazing on land in the Conservation Reserve Program (CRP) in 30 states including Iowa for farmers and livestock owners who were affected by drought.

July 31, 2006—The statewide average precipitation for the May through July period was only 8.28 inches or 4.83 inches less than normal. This ranks 2006 as 8th driest among 134 years of record for this time period with only 1988 being drier in the most recent 70 years.

October 5, 2005—In southeastern Iowa, some elevators turned farmers away with loads of corn. Some corn has also been rejected by processors, because of aflatoxin. Aflatoxin is a naturally occurring toxin and it is caused by a mold that grows in corn damaged by insects or heat stress.

June, July & August 2003—This was the driest summer since 1991 with only a total of 9.87 inches of rain or 3.20 inches less than normal. The dry conditions caused deterioration on corn and soybean production.

August & September 2000—According to NCEI, crops were stressed with the warm temperatures and lack of rainfall. Livestock deaths occurred because of the daytime heat and warm overnight temperatures.

July 20-30, 1999—According to NCEI the hot and dry conditions hindered the pollination process. Crop losses over the south third of the State were near 20%.

3.3.6.5 PROBABILITY OF FUTURE OCCURRENCE

Both the NCEI and the National Drought Mitigation Center reported an average of more than one drought event or impact per year over the periods for which data is available from these sources (1999-2024 for the NCEI data and 2011-2024 for the National Drought Mitigation Center data). Therefore, this plan considers the hazard to be “highly likely” as defined in the Probability Scoring Methodology section.

3.3.6.6 VULNERABILITY

The specific impacts of drought can vary, but all jurisdictions in Polk County are considered to be equally vulnerable to this hazard. The potential impacts of drought on community lifelines are described in the table below.

Table 50. Potential Impacts of Drought on Community Lifelines

Lifelines	Impact Type	Description
Water & Wastewater Systems		Drought can significantly impact water and wastewater systems, posing challenges to both the availability of freshwater resources and the proper functioning of wastewater treatment processes. Some keyways in which drought affects these systems can include: reduced water supply, increased water demand, concentration of contamination, water quality can fluctuate, groundwater depletion, and increased operational costs for businesses.

Food, Shelter, & Housing		Drought can have far-reaching impacts on food, shelter, and housing issues in counties, affecting both rural and urban communities. The impacts of drought could include food scarcity from crop failure and livestock depletion, shelter and housing crisis due to wildfire or water supply issues for construction, and lastly, it can create economic impact and job losses due to lack of resources for agricultural businesses making the housing markets unaffordable by degrading average household incomes.
Health & Medical		Drought impacts can be as wide reaching as affecting health and medical elements of the County's communities. Malnutrition can be one of these impacts with reduced food availability and increased prices of goods. Prolonged drought can also lead to social strain within communities as residents struggle with economic hardships, limited resources, housing challenges, and other stress inducing impacts due to drought.

A) People

Droughts exert far-reaching impacts on individuals and communities, encompassing diverse facets of life. The direct consequence of water scarcity is pronounced, affecting both rural and urban populations as diminished precipitation lowers water levels in rivers, lakes, and reservoirs. Agriculture bears the brunt of droughts, leading to crop failures, livestock losses, and economic hardship for farmers, contributing to food insecurity and heightened food prices. Economic repercussions extend beyond agriculture, influencing industries such as tourism and energy production, resulting in job losses and increased poverty rates. Water scarcity and food insecurity elevate health risks, fostering waterborne diseases and malnutrition, particularly among vulnerable populations. Livelihoods dependent on water availability, such as fisheries, face disruption.

B) Structures

Droughts in Polk County, Iowa, can have significant impacts on structures and infrastructure. Prolonged dry spells can lead to foundation issues, causing structural damage such as cracks in walls and floors due to soil shrinkage. Reduced water availability during droughts strains water supplies, affecting residential, commercial, and agricultural structures alike.

C) Systems

Droughts exert far-reaching impacts on critical systems essential for community stability and well-being. Water supply systems face reduced availability, stressing municipal sources, reservoirs, and treatment facilities. Agricultural systems experience diminished soil moisture and irrigation water,

leading to lower crop yields, livestock struggles, and economic losses for farmers. Energy production systems, especially reliant on hydropower, are hampered by lower water levels, resulting in energy shortages and increased dependence on alternative sources. Infrastructure systems, including roads and buildings, are affected by soil moisture reduction, impacting transportation and overall resilience. Economic systems witness cascading effects as agriculture faces losses, industries dependent on water experience disruptions, and local economies are strained.

D) Natural, Historic, and Cultural Resources

The indirect effects of drought, particularly sustained durations of exposure, are a larger threat to the natural environment than the direct effects, although localized impacts to the natural environment are possible. Maintenance of natural, historical and cultural resources and sites require substantial volumes of water every year which can be particularly challenging during sustained periods of drought.

E) Community Activities

Droughts significantly impact community activities across various domains. Water-dependent activities, including swimming and boating, are directly affected as water levels in lakes and rivers decline, leading to restrictions and closures of recreational areas. Outdoor events and festivals may be scaled down or canceled due to concerns about fire hazards and reduced water availability. Recreational sports and physical activities face disruptions as playing fields and parks become less suitable for outdoor pursuits. Tourism in communities reliant on outdoor attractions may experience a decline in visitor numbers, affecting local businesses. Community gardens and green spaces suffer as water conservation measures limit maintenance.

Polk County has 768 farms in the County that cover 179,322 acres of land. This translates to 49% of the surface land in the County being used for agriculture. Therefore, the planning area has significant agricultural exposure to this hazard. Aside from agricultural impacts, other losses related to drought include increased costs of fire suppression, disruption to local ecosystems, and damage to roads and structural foundations due to the shrink dynamic of expansive soils during excessively dry conditions. Drought also presents hazards to public health in extreme cases, where drinking water production cannot keep up with demand. Water wells become less productive during drought and a failure of remaining productive wells (due to power outage, etc.) can cause public drinking water supplies to become compromised.

Existing Development

Areas associated with agricultural use are vulnerable to drought conditions which could result in a decrease in crop production or a decrease in available grazing area for livestock. Drought has no real effect on houses and buildings. The impacts would be minimal in terms of landscaping. Rationing water supplies would most likely be the worst case scenario impact.

According to the ten year period from USDA's Risk Management Agency, the amount of claims paid for crop damage as a result of drought in Polk County was $14,080,555.41. According to the 2017

Iowa Crop Insurance Profile from USDA's Risk Management Agency, 88% of the insurable crops in Iowa are insured with USDA Crop Insurance. To factor in estimated losses to insurable crops that are not insured, the 88% crop insurance coverage was factored in to provide an adjusted estimate of losses. According to this calculation, estimated annualized losses were $1,600,063.

Considering the value of crops from the Census of Agriculture as baseline crop exposure, the estimated annual losses from drought was determined minimal compared to the value of the insurable crops.

Future Development

Increases in acreage planted with crops would increase the exposure to drought-related agricultural losses. In addition, increases in population add additional strain on water supply systems to meet the growing demand for treated water.

Climate Change

Climate change is exerting significant impacts on drought conditions in Polk County. Rising temperatures associated with climate change contribute to increased evaporation rates, leading to drier conditions and exacerbating the intensity and frequency of drought events. Altered precipitation patterns, characterized by changes in the timing, intensity, and distribution of rainfall, further contribute to water scarcity in the region. Extended growing seasons, resulting from changes in temperature and weather patterns, increase water demand for crops and add stress to water resources, exacerbating drought conditions. Reduced soil moisture, a consequence of warmer temperatures and shifting precipitation, plays a role in the onset and persistence of drought, affecting agriculture, water supply, and overall ecosystem health.

The increased frequency and intensity of extreme weather events associated with climate change contribute to more rapid transitions between wet and dry conditions, adding to the variability of drought. These changes impact water supply sources, posing risks to both agricultural and municipal water needs in Polk County. Drought conditions, in turn, pose significant risks to agriculture, affecting crop yields and livestock, and may necessitate shifts in local agricultural practices and economies. The ecological consequences of prolonged drought include adverse effects on natural habitats, biodiversity, and the overall health of ecosystems in Polk County, impacting local wildlife and ecosystem services.

Hazard Risk Score

Table 51. Drought Probability and Health Impact Ratings

Health Severity	Community Impact	Public Health System Impact	Healthcare System Impact	Total Health Hazard Score	Probability
1	0	1	1	3	Highly Likely

3.3.7 EARTHQUAKES

3.3.7.1 DESCRIPTION

An earthquake is a natural phenomenon characterized as a sudden motion or trembling that is caused by a release of energy accumulated within or along the edge of Earth's tectonic plates. Earthquakes occur primarily along fault zones, tears in the Earth's crust, along which stresses build until one side of the fault slips, generating compressive and shear energy that produces the shaking and damage to the built environment. The composition of geologic materials between these points is a major factor in transmitting the energy to buildings and other structures on the Earth's surface. The point on the Earth's surface directly above the origin of the earthquake is known as the epicenter, while the actual location of the earthquake within the crust is called the hypocenter or focus. Heaviest damage generally occurs nearest the epicenter.

The magnitude of an earthquake, which reflects the amount of energy released, is typically measured on the Richter scale or, more commonly now, the moment magnitude scale. Earthquakes can have significant impacts, ranging from ground shaking, surface rupture, and soil liquefaction, to triggering landslides and tsunamis. They are major natural hazards that can lead to loss of life, injury, and extensive property damage.

3.3.7.2 LOCATION

While geologists often refer to the Midwest as the "stable midcontinent," because of its lack of major crustal movements, there are two regions of seismic activity: the Nemaha Ridge and the New Madrid Fault Zone. The Nemaha Ridge in Kansas and Nebraska, associated with the Humboldt Fault, is characterized by numerous small earthquakes that release stresses before they build to dangerous levels. The fault is not considered a threat to Iowa. The New Madrid Fault Zone, on the other hand, has greater destructive potential. It is located along the valley of the Mississippi River, from its confluence with the Ohio River southward, and includes portions of Illinois, Kentucky, Tennessee, Missouri, Arkansas, and Mississippi. The Earth's crust in the midcontinent is older, and therefore thicker, cooler, and more brittle than that in California for example. Consequently, earthquake shock waves travel faster and farther in the Midwest, making quakes in the planning potentially more damaging than similar sized events in other geologic settings. Activity in the New Madrid Fault Zone is likely to be the largest seismic threat to Iowa and the planning area, although the overall risk of earthquakes remains low.

3.3.7.3 EXTENT

The extent or severity of earthquakes is typically measured in two ways: 1) Magnitude Measurement utilizing the Richter Magnitude Scale and 2) Severity Measurement utilizing the Modified Mercalli Intensity Scale.

Richter Magnitude Scale

The Richter Magnitude Scale was developed in 1935 by Charles F. Richter of the California Institute of Technology as a mathematical device to compare the size of earthquakes. The magnitude of an earthquake is determined from the logarithm of the amplitude of waves recorded by seismographs. Adjustments are included for the variation in the distance between the various seismographs and the epicenter of the earthquakes. On the Richter Scale, magnitude is expressed in whole numbers and decimal fractions. For example, a magnitude 5.3 might be computed for a moderate earthquake, and a strong earthquake might be rated as magnitude 6.3. Because of the logarithmic basis of the scale, each whole number increase in magnitude represents a tenfold increase in measured amplitude; as an estimate of energy, each whole number step in the magnitude scale corresponds to the release of about 31 times more energy than the amount associated with the preceding whole number value. Table 52 provides an overview of the Richter Scale magnitudes and corresponding damage.

Table 52. Richter Scale Magnitudes and Effects

Richter Magnitude	Earthquake Effects
2.5 or less	Usually not felt, but can be recorded by seismograph
2.5 to 5.4	Often felt, but causes only minor damage
5.5 to 6.0	Slight damage to buildings and other structures
6.1 to 6.9	May cause a lot of damage in very populated areas
7.0 to 7.9	Major earthquake; serious damage
8.0 or greater	Great earthquake; can destroy communities near the epicenter

Modified Mercalli Intensity Scale

The effect of an earthquake on the Earth's surface is called the intensity. The intensity scale consists of a series of certain key responses such as people awakening, movement of furniture, damage to chimneys, and finally - total destruction. Although numerous *intensity scales* have been developed over the last several hundred years to evaluate the effects of earthquakes, the one currently used in the United States is the Modified Mercalli (MM) Intensity Scale. It was developed in 1931 by the

American seismologists Harry Wood and Frank Neumann. This scale, composed of 12 increasing levels of intensity that range from imperceptible shaking to catastrophic destruction, is designated by Roman numerals. It does not have a mathematical basis; instead it is an arbitrary ranking based on observed effects.

The Modified Mercalli Intensity value assigned to a specific site after an earthquake has a more meaningful measure of severity to the nonscientist than the magnitude because intensity refers to the effects actually experienced. The lower numbers of the intensity scale generally deal with the manner in which the earthquake is felt by people. The higher numbers of the scale are based on observed structural damage. Structural engineers usually contribute information for assigning intensity values of VIII or above. Table 53 provides additional information about the Modified Mercalli Intensity scale ratings.

Table 53. Modified Mercalli Intensity Scale with Associated Impacts

Scale	Intensity	Description of Effects	Corresponding Richter Scale magnitude
I	Instrumental	Usually detected only on seismographs.	<4.2
II	Feeble	Felt only by a few persons at rest, especially on upper floors of buildings.	
III	Slight	Felt quite noticeably indoors, especially on upper floors. Most people don't recognize it as an earthquake (i.e. a truck rumbling).	
IV	Moderate	Can be felt by people walking; dishes, windows, and doors are disturbed.	
V	Slightly Strong	Sleepers are awoken; unstable objects are overturned.	<4.8
VI	Strong	Trees sway; suspended objects swing; objects fall off shelves; damage is slight.	<5.4
VII	Very Strong	Damage is negligible in buildings of good design and construction, slight to moderate in well-built ordinary structures, and considerable in poorly built or badly designed structures; some chimneys are broken.	<6.1
VIII	Destructive	Damage is slight in specially designed structures; considerable in ordinary, substantial buildings. Moving cars become uncontrollable; masonry fractures, poorly constructed buildings damaged.	<6.9

Scale	Intensity	Description of Effects	Corresponding Richter Scale magnitude
IX	Ruinous	Some houses collapse, ground cracks, pipes break open; damage is considerable in specially designed structures; buildings are shifted off foundations.	
X	Disastrous	Some well-built wooden structures are destroyed; most masonry and frame structures are destroyed along with foundations. Ground cracks profusely; liquefaction and landslides widespread.	<7.3
XI	Very Disastrous	Most buildings and bridges collapse, roads, railways, pipes, and cables destroyed.	<8.1
XII	Catastrophic	Total destruction; trees fall; lines of sight and level are distorted; ground rises and falls in waves; objects are thrown upward into the air.	>8.1

According to the Iowa Geological Survey, the southeastern part of the state of Iowa is more at risk to earthquake effects from the New Madrid Fault Zone. Iowans in four southeast counties could experience trembling buildings, some broken dishes and cracked windows, movement and falling of small unstable objects, abrupt openings or closing doors, and liquids spilling from open containers. About 29 other counties, from Page to Polk to Muscatine, could experience vibrations similar to the passing of a heavy truck, rattling of dishes and windows, creaking of walls, and swinging of suspended objects.[14] These effects will vary considerably with differences in local geology and construction techniques. The risk of damaging earthquakes remains low across Iowa, including the entirety of the planning area.

3.3.7.4 PAST OCCURRENCES

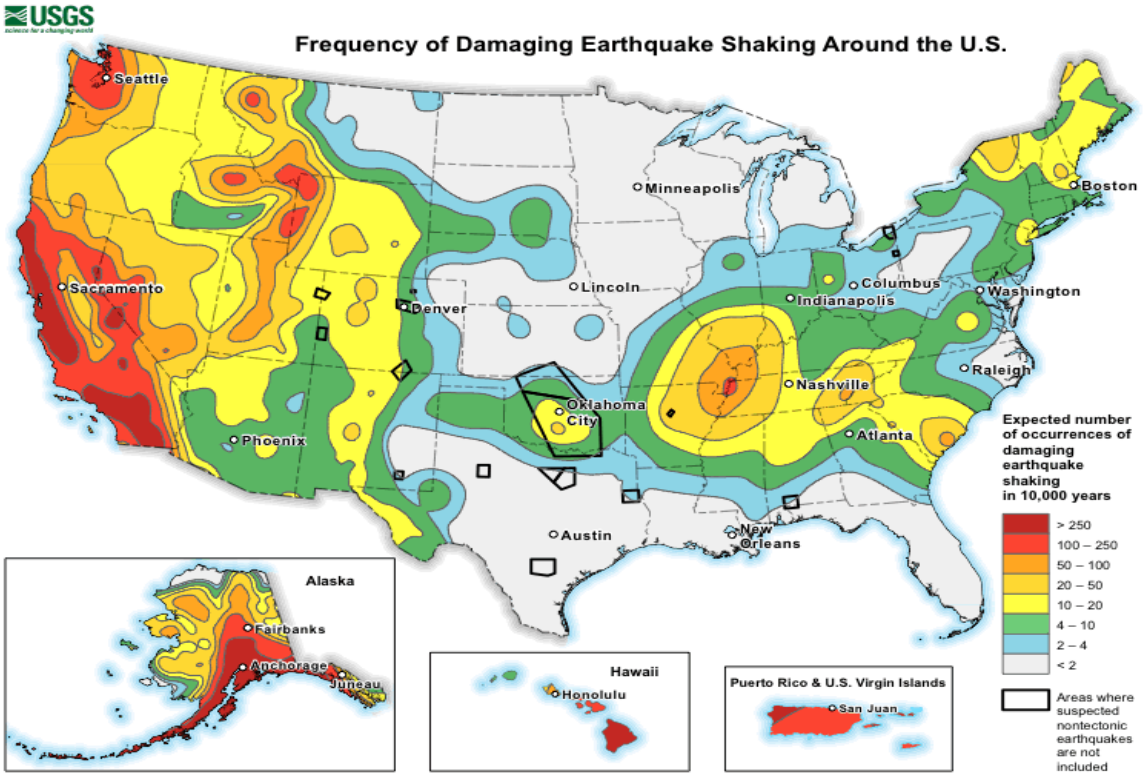
Iowa has experienced little effects from only a few earthquakes in the past 175 years. According to the Iowa Department of Natural Resources, as of 2011, the epicenters of 13 earthquakes have been located in the State of Iowa, and most of these occurred along the Mississippi River. The U.S. Geological Survey identifies one additional earthquake in Iowa in 2021 – a magnitude 2.7 with an epicenter near Rembrandt, Iowa. The strongest earthquake in Iowa occurred in Davenport in 1934 and resulted in only slight damage. There have been no epicenters in Polk County and no documented earthquake damages in the County.

[14] Iowa Geological Survey. "An Iowa Perspective on Earthquakes." iowageologicalsurvey.uiowa.edu. Accessed February 6, 2024. https://iowageologicalsurvey.uiowa.edu/iowa-geology/popular-interest/iowa-perspective-earthquakes.

3.3.7.5 PROBABILITY OF FUTURE OCCURRENCE

The risk of damaging earthquakes remains low across Iowa, including the entirety of the planning area. As can be seen in Figure 58, virtually all of Iowa is expected to experience fewer than two damaging earthquakes in a 10,000-year period. The probability of a damaging earthquake in any given year is "unlikely."

Figure 58. Frequency of Damaging Earthquake Shaking Around the U.S.



=

3.3.7.6 VULNERABILITY

Earthquakes – although unlikely in Polk County – can have significant impacts on community lifelines, and these impacts are described in the table below. All jurisdictions in Polk County are equally vulnerable to earthquakes.

Table 54. Potential Impacts of Earthquakes on Community on Community Lifelines

Lifelines	Impact Type	Description
Water & Wastewater Systems		Earthquakes often damage water lines and sewage systems, leading to water shortages and sanitation issues. Restoring these services is crucial for public health and hygiene.
Food, Shelter, & Housing	 	The destruction of homes and businesses can displace people, creating an immediate need for shelter. Additionally, disruptions in supply chains can impact the availability and distribution of food. Incoming evacuees from areas more heavily damaged by an event may result in a demand surge for shelter, food, and water.
Health & Medical		Healthcare facilities might suffer structural damage, and there could be an influx of injured individuals needing medical attention. Disruptions in utility services could also affect the operation of hospitals and clinics. Incoming evacuees from areas more heavily damaged by an event may have significant medical needs. The increased demand for health and medical services may be greater than what the local resources can support.
Energy		Power outages are common following earthquakes due to damage to power stations and distribution lines. This can affect not only homes and businesses but also critical facilities like hospitals and emergency response centers. Incoming evacuees from areas more heavily damaged by an event may increase demand for energy in the planning area.

Lifelines	Impact Type	Description
Safety & Security		Earthquakes can cause significant damage to infrastructure, leading to hazardous situations like building collapses, gas leaks, and fires. Emergency services such as police, fire, and rescue teams would be heavily involved in immediate response efforts.
Transportation		Earthquakes can damage roads, bridges, and public transportation systems, impeding mobility and rescue efforts. Restoring transportation is vital for response operations and for the community to begin returning to normalcy. Incoming evacuees from areas more heavily damaged by an event may create congested roadways and put additional stress on the transportation network.

A) People

Certain demographics, notably the elderly, young children, and those living below the poverty line, are particularly vulnerable due to factors like their physical capacity, financial resources, and housing conditions. A significant oversight in disaster planning is the lack of consideration for individuals with disabilities. A 2014 UNDRR report emphasized that only a mere 15% of disabled persons were consulted during community resilience planning. In the event of a major earthquake, the repercussions could disproportionally impact those with limited mobility, including young children, the elderly, and individuals with a disability.

B) Structures

Many of the most striking images of earthquakes are those of buildings which have been damaged or destroyed as a result of earthquakes. While the high-magnitude events which happen elsewhere in the country are exceedingly unlikely in Iowa, even smaller events have the potential to damage structures. Since most buildings in the Polk County are not designed to withstand damaging earthquakes, many structures would likely be damaged if a significant earthquake does occur. Polk County has a plethora of large structures in and around the Des Moines metropolitan area, including the tallest building in Iowa. The structural integrity of these structures could be comprised if sufficient motion occurs. In the event of a severe incident, residents might find themselves unable to return to their homes or communities for an extended duration. Even moderate earthquakes might cause minor structural damages, mandating safety inspections of buildings and residences. Until safety is assured, residents would need to vacate their premises.

C) Systems

Virtually all systems which communities rely upon could be damaged by an earthquake. Gas pipelines are of particular concern as a rupture could create a significant fire risk. Water and sewer pipelenes could also rupture, and communication and power lines be severed. On the transportation front, roads and rail tracks might bear the brunt of ground failures, potentially disrupting regional transport and material distribution. Damaged and obstructed roads could also slow the pace of emergency services and first responders.

D) Natural, Historic, and Cultural Resources

Generally, the impact of earthquakes on the natural environment is relatively short lived. Flora and Fauna may be temporarily affected, but typically they return to form on their own. Longer-term impacts could occur if an earthquake fundamentally alters the character of an area such as rerouting a river. Additionally, earthquakes could damage or kill crops, and this could be detrimental to the local economy and potentially result in food shortages.

E) Community Activities

A significant earthquake could significantly disrupt the rhythm of daily life and community activities. Public gatherings, school sessions, local events, and religious ceremonies might face abrupt cancellations or postponements due to safety concerns or infrastructure damages. Local businesses, including farmers' markets, shops, and eateries, which form the backbone of community interactions, could experience temporary closures, impacting local economy and livelihoods. Parks and recreational areas, often hubs for community bonding, might be deemed unsafe due to potential aftershocks or structural damages, depriving residents of essential communal spaces.

As discussed under the probability section, the entire planning area is expected to experience fewer than two damaging earthquakes in a 10,000-year time period. Although a damaging event is unlikely, the potential impacts could be costly as most structures in Polk County are not built to withstand earthquake shading. The main impacts to Polk County from a New Madrid Earthquake would likely be related to incoming evacuees from areas more heavily damaged by the event. This could result in a shortage of short-term lodging, such as hotel rooms and extended stay establishments. Depending on the magnitude of the earthquake, shelters may be designated in Polk County as evacuee shelter locations. If this occurred, assistance would be coordinated through the Emergency Management Assistance Compact (EMAC) between the State of Iowa and State governments of impacted areas.

Existing Development

FEMA’s loss estimation software HAZUS was utilized to assess the potential impact of an earthquake in the planning area. The probabilistic hazard option allows the user to generate estimates of damage and loss based on probabilistic seismic hazard for eight return periods assigned to each census tract in the planning area. Probabilistic hazard data are provided by the USGS and are derived from the latest national seismic hazard maps.

HAZUS can use the probabilistic data to estimate annualized losses. Annualized loss is defined as the expected value of loss in any one year and is developed by aggregating losses calculated for the eight specified probabilistic return periods (100, 250, 500, 750, 1000, 1500, 2000 and 2500 year) and their exceedance probabilities. The annualized loss estimates of a 5.0 magnitude earthquake in Polk County are shown in Table 55.

Table 55. Annualized Estimated Economic Losses 5.0 Magnitude Event (In Dollars)

Category	Area	Single Family	Other Residential	Commercial	Industrial	Others	Totals
Income Losses	Wage	$0.00	$1,300.00	$23,700.00	$600.00	$5,100.00	$30,700.00
	Capital-related	$0.00	$500.00	$19,500.00	$300.00	$600.00	$20,900.00
	Rental	$1,300.00	$2,800.00	$11,300.00	$500.00	$2,300.00	$18,200.00
	Relocation	$4,600.00	$1,400.00	$17,000.00	$2,800.00	$11,300.00	$37,100.00
Capital Stock Losses	Structural	$11,600.00	$3,300.00	$25,100.00	$6,400.00	$10,000.00	$56,400.00
	Non-structural	$29,800.00	$8,900.00	$30,500.00	$6,600.00	$18,800.00	$94,600.00
	Content	$4,700.00	$1,100.00	$9,400.00	$3,500.00	$5,300.00	$24,000.00
	Inventory	$0.00	$0.00	$1,600.00	$500.00	$0.00	$2,100.00
Totals		**$52,000.00**	**$19,300.00**	**$138,100.00**	**$21,200.00**	**$53,400.00**	**$284,000.00**

Source: HAZUS-MH 6.0 February 2024

Table 56 provides the anticipated numbers of buildings by type and damage category that would result according to the HAZUS analysis. The estimated building types and counts are from the HAZUS damage outputs utilizing census block data.

Table 56 – Annualized Expected Buildings Damaged by Building Type—5.0 Magnitude Earthquake

Property Type	None	Slight	Moderate	Extensive	Complete	Total
Agriculture	34	0	0	0	0	34
Commercial	7,022	73	16	0	0	7,111
Education	32	0	0	0	0	32
Government	8,774	196	47	0	0	9,017
Industrial	1,225	11	1	0	0	1,237
Other Residential	10,217	186	36	0	0	10,439
Religion	527	2	0	0	0	529
Single Family	143,557	3,618	541	13	0	147,729
Polk County Total	**171,388**	**4,086**	**641**	**13**	**0**	**176,128**

Source: HAZUS-MH 6.0, February 2024.

Future Development

Overall the planning area has a low vulnerability to earthquake risk. Future development is not expected to increase the risk other than contributing to the overall exposure of what could become damaged as a result of an unlikely event.

Climate Change

The correlation between climate change and earthquakes is an area of ongoing research. Current research on the matter is inconclusive, and Polk County is encouraged to monitor this topic for any new developments.

Hazard Risk Score

Table 57. Earthquake Probability and Health Impact Ratings

Health Severity	Community Impact	Public Health System Impact	Healthcare System Impact	Total Health Hazard Score	Probability
1	1	1	3	6	Unlikely

3.3.8 EXPANSIVE SOILS

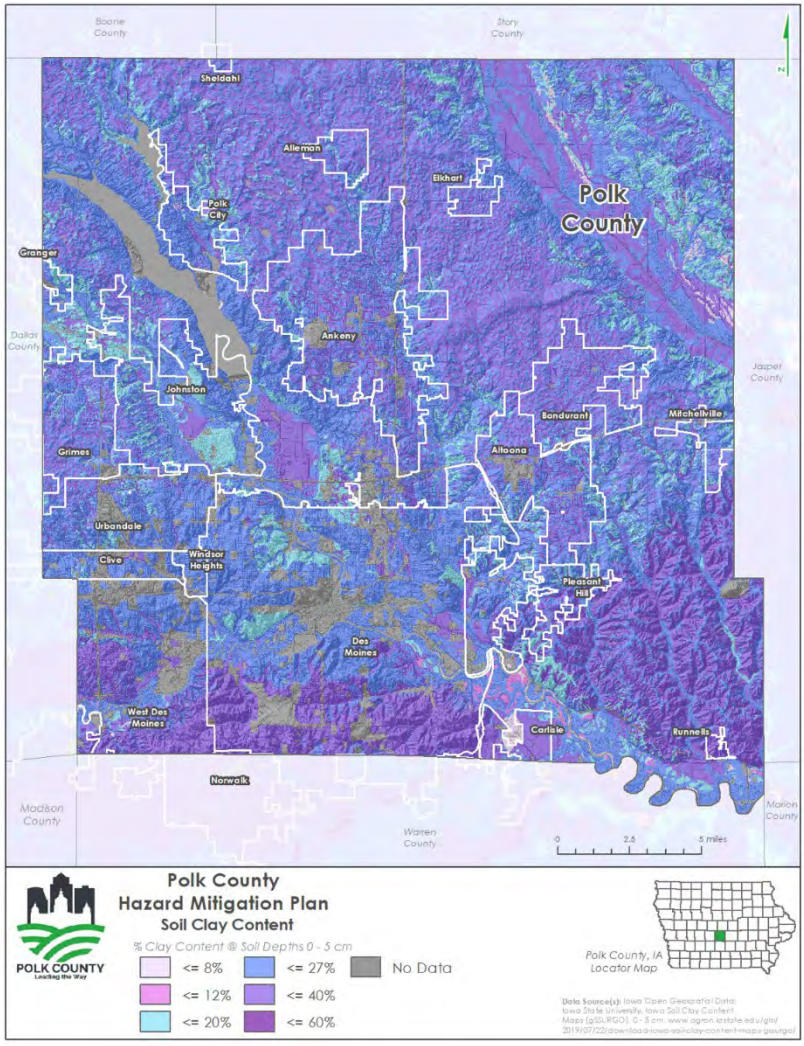
3.3.8.1 DESCRIPTION

Expansive soils are soils that expand and shrink in relation to their water content. Expansive soils, also known as shrink-swell soils, can cause physical damage to building foundations, roadways, and other components of the infrastructure when clay soils swell and shrink due to changes in moisture content. For Iowa, the vulnerability to this hazard most frequently is associated with soils shrinking during periods of drought.

3.3.8.2 LOCATION

The figure below shows a map of the swelling potential of soils in Iowa. Soils with higher swelling potential are reflected with darker shading. However, the entire planning area and all participating jurisdictions are, to some degree, vulnerable to this hazard.

Figure 59. Polk County Soil Clay Contents



3.3.8.3 EXTENT

Expansive soils typically contain clay minerals that undergo significant volume changes with variations in moisture content. Some of the common impacts of expansive soils are:

- Instability of structures on slopes
- Lateral movement of foundations and retaining walls
- Damage to pipelines and other buried infrastructure
- Lifting and settling of buildings
- Damage to roads, sidewalks, and driveways

Swelling clays derived from residual soils can exert uplift pressures of as much as 5,500 PSF, which can do considerable damage to lightly-loaded wood-frame structures. Insurance companies pay out millions of dollars yearly to repair homes distressed by expansive soils.

3.3.8.4 PREVIOUS OCCURRENCES

Streets and parking lots throughout the County, as well as underground water lines, are damaged every year by the effects of expansive soils. The frequency of damage from expansive soils can be associated with the cycles of drought and heavy rainfall, which leads to changes in moisture content. Damages occur with isolated incidents and affected property owners, local governments, and businesses generally make any necessary repairs.

The Urbandale School District reported significant damages to Jensen Elementary as a result of exterior wall movement that occurred due to expansive soils. The most recent incident and most notable damage became noticeable in 2010 and gradually became worse. Soil movement at this site caused cracking of mortar joints in CMU walls, some damaged CMU block, floor shifting, as well as major window and door problems. This problem resulted in the District closing a classroom for approximately two weeks. The students had to be moved to another area while helical pilings and structural repairs were made. The cost of repairs was over $140,000.

3.3.8.5 PROBABILITY OF FUTURE OCCURRENCE

Although there will continue to be future damage to paved areas and foundations in Polk County due to swelling soils, it is unlikely that these damages will become greater in the future unless new development occurs in areas where the hazard is more severe. Certain buildings and construction practices may be put in place to lessen these impacts. Based on the structure-specific nature of damage from expansive soils, the probability of *significant* impacts from expansive soils occurring is considered “unlikely.”

3.3.8.6 VULNERABILITY

The entire planning area is vulnerable to some structural damage as a result of shrinking and expanding soils. In most cases, individual property owners, local governments, and businesses pay for repairs to damages caused by this hazard. Utility lines such as water and sewer pipes may be at risk to damages associated with expansive soils.

Table 58. Potential Impacts of Expansive Soils on Community Lifelines

Lifelines	Impact Type	Description

Water & Wastewater Systems		Expansive soils water supplies and damage water infrastructure, leading to shortages and health hazards. Wastewater treatment facilities may also be overwhelmed or damaged, increasing the risk of waterborne diseases from contamination or increase of debris and sediment.
Food, Shelter, & Housing	 	Depending on the location and construction of housing and shelter, residents may be displaced due to their homes being damaged or otherwise compromised. Large scale expansive soil incidents may also damage agriculture and crop yields in cases where harvest plots are exposed these soils which are highly vulnerable to expansion.
Communications		Communication networks may be disrupted or damaged by expansive soils, which can hinder the coordination of rescue and relief efforts as well as the dissemination of important information to the public.
Energy		Expansive soils can cause power outages by damaging electrical infrastructure. Fuel supply may also be disrupted, affecting not just transportation but also heating and power generation.
Transportation		Expansive soils can damage roads, bridges, and rail lines, severely limiting mobility and access. This disruption impacts not just daily commutes but also the delivery of essential goods and services.

A) People

Soil expansion and contraction can pose some mild danger to people depending on the scope of expansion. Most common dangers from expanding soils occur when expansion affect homes, roadways, and critical infrastructure.

B) Structures

Soil expansion and contraction can lead to foundation movement, causing uneven settlement and compromising the structural integrity of buildings. This, in turn, results in cracks in foundations, walls, and floors, with potential distortions such as tilting or leaning walls. Structures with basement or slab-on-grade foundations are particularly vulnerable, as expansive soils can lead to costly damage, including misaligned doors and windows, plumbing and utility issues, and water intrusion.

C) Systems

Expansive soils can cause power, water, and gas outages; disrupt transportation routes and the movement of commercial goods; pollute drinking water systems; and damage or destroy communications infrastructure. These impacts can disrupt other community services like trash/recycling collection, law enforcement, and medical care. Nearly all transportation modes (e.g., roads, transit, aviation, etc.) are vulnerable to the impacts of expasive soils.

D) Natural, Historic, and Cultural Resources

Expansive soils can exert diverse impacts on natural, historical, and cultural resources. In natural ecosystems, these soils may disrupt vegetation and alter water availability, affecting the health of plant life and influencing local water bodies. Historical resources, including buildings and archaeological sites, face the risk of structural damage, foundation movement, and artifact disturbance due to expansive soils. Preservation efforts for historical and cultural landmarks must carefully consider the potential consequences of soil-related issues.

E) Community Activities

Expansive soils cause minimal impacts to community activities, but can cause cancellations, postponements, and relocations of community events and activities due to direct or indirect damage to hosting locations. Repairs and restoration may cause delay to resuming those community activities.

Existing Development

Existing development will continue to be vulnerable to expansive soils, especially the existing development that is in expansive soil prone areas and unable to be relocated.

Future Development

Additional future developments in the planning area will also be vulnerable to this hazard, depending on location and what types of soils and environment the development is ocuring. Geotechnical considerations and mitigation actions at the time of construction can reduce this risk.

Climate Change

Climate change is expected to increase the severity and frequency of drought, which can impact expansive soils. Rising temperatures contribute to increased evaporation, leading to soil drying,

contraction, and potential cracking in expansive soils. Changes in precipitation patterns associated with climate change can result in variations in moisture levels, causing swelling during wet periods and contraction during dry spells, which may lead to soil instability. The increased frequency and intensity of other extreme weather events, such as heavy rainfall or droughts, further contribute to rapid fluctuations in soil moisture.

Hazard Risk Score

Table 59. Expansive Soils Probability and Health Impact Ratings

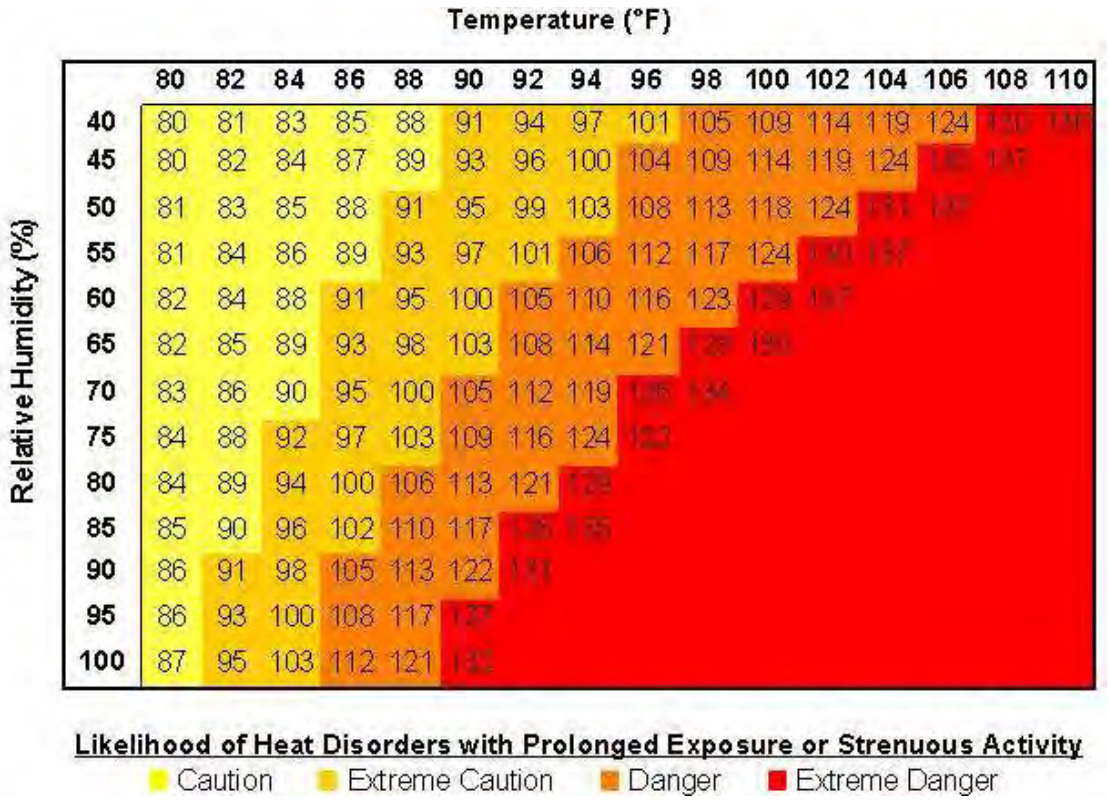
Health Severity	Community Impact	Public Health System Impact	Healthcare System Impact	Total Health Hazard Score	Probability
1	0	0	2	3	Unlikely

3.3.9 EXTREME TEMPERATURE

3.3.9.1 DESCRIPTION

Extreme temperature events, both hot and cold, can have severe impacts on human health and mortality, natural ecosystems, agriculture and other economic sectors. According to extreme heat data provided by FEMA, extreme heat is defined as temperatures that hover 10 degrees or more above the average high temperature for the region and last for several weeks. Extreme cold is defined as a period of reaching or exceeding locally/regionally defined warning criteria (typical value around -35° F or colder). Ambient air temperature is one component of extreme temperature conditions, with relative humidity being the other. The relationship of these factors creates what is known as the apparent temperature. The Heat Index chart shown in Figure 60 uses both of these factors to produce a guide for the apparent temperature or relative intensity of heat conditions.

Figure 60 - National Weather Service Heat Index (HI) Chart



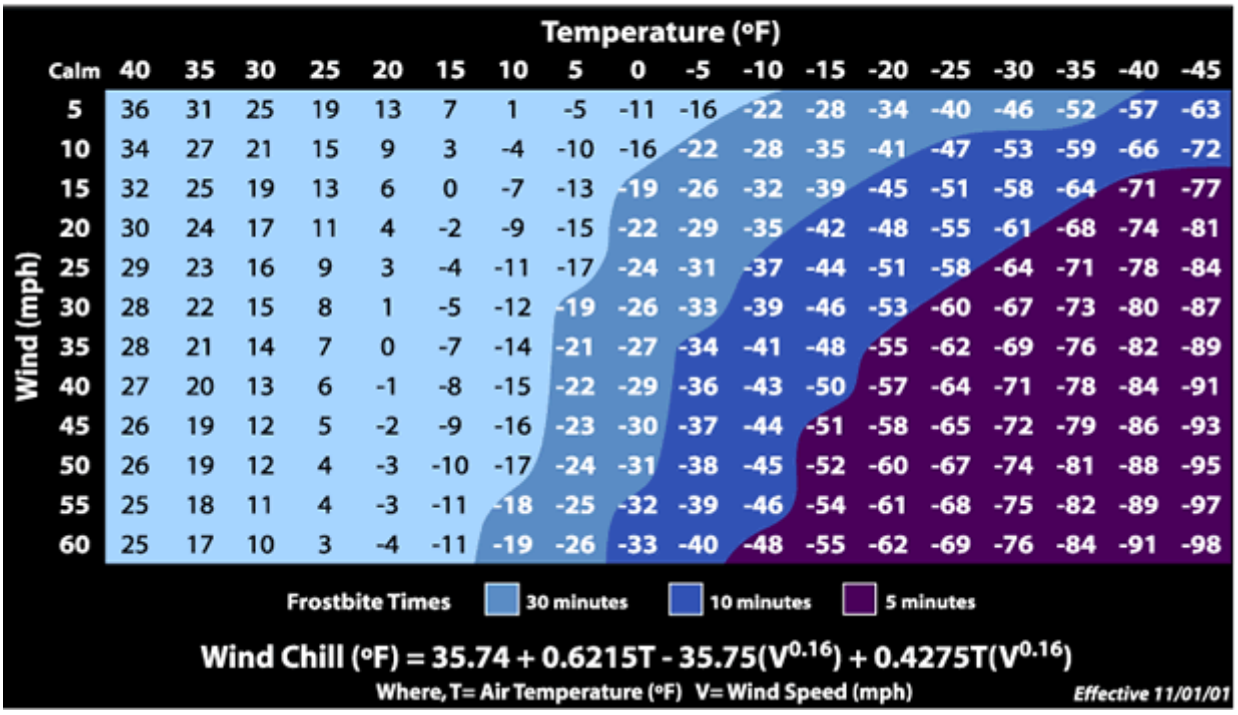
Source: National Weather Service (NWS)

Note: Exposure to direct sun can increase Heat Index values by as much as 15°F. The shaded zone above 105°F corresponds to a HI that may cause increasingly severe heat disorders with continued exposure and/or physical activity.

The National Weather Service has a system in place to initiate alert procedures (advisories or warnings) when the temperature is expected to have a significant impact on public safety. The expected severity of the event determines whether advisories or warnings are issued. A common guideline for issuing excessive heat alerts is when the maximum daytime Heat Index is expected to equal or exceed 105 degrees Fahrenheit (°F) and the night time minimum Heat Index is 80 °F or above for two or more consecutive days. A heat advisory is issued when temperatures reach 105 ºF and a warning is issued at 115 degrees.

Similarly, the NWS also issues a wind chill warning when dangerously cold wind chill values are expected or occurring. The table below from the national weather service shows the apparent air temparature based on wind speed and temparature, and the relative risk of frostbite under these conditions.

Table 60 – Wind Chill



3.3.9.2 LOCATION

The entire planning area is subject to extreme temperatures and all participating jurisdictions are affected.

3.3.9.3 EXTENT

Extreme temperature events in Polk County, Iowa, can have multifaceted impacts on the community. Extreme temperatures pose significant health risks, particularly for vulnerable populations, leading to exposure-related illnesses. Agriculture may suffer as crops and livestock experience heat or cold stress, potentially affecting yields and the local agricultural economy. Water resources may be strained due to increased evaporation during periods of excessive heat, exacerbating drought conditions. Infrastructure, including roads and bridges, may undergo stress, and the demand for electricity for cooling systems can strain power grids, impacting energy consumption. Outdoor activities may be limited, affecting tourism and recreational events. Emergency services need to be prepared for increased demand, particularly related to temperature-related illnesses.

3.3.9.4 PREVIOUS OCCURRENCES

Table 61 below shows information obtained from the National Centers for Environmental Information (NCEI) and the National Weather Service in Des Moines, Iowa there have been 3 heat-

related watches 12 heat-related warnings and 26 heat-related advisories between 2005 and August 2023.

Table 61 - Heat Warnings, Watches, and Advisories Issued, May 2005-May 2023

Phenomena	Significance	Number Issued
Heat	Warning	8
Heat	Watch	3
Heat	Advisory	48

Source: Iowa State University, Iowa Environmental Mesonet, VTEC Archives

According to the National Centers for Environmental Information, Iowa has experienced 22 days of excessive heat from 1996 and 2023. During these 22 days of excessive heat there have been 99 counties (multiple counties affected multiple times), 3 deaths or injuries, and 2 property damages. Those at greatest risk for heat-related illness include infants and children up to five years of age, people 65 years of age and older, people who are overweight, and people who are ill or on certain medications. However, even young and healthy individuals are susceptible if they participate in strenuous physical activities during hot weather. In agricultural areas, the exposure of farm workers, as well as livestock, to extreme temperatures is a major concern.

According to the National Weather Service COOP station in Des Moines, Iowa, years when temperatures exceeded 100 during an event were 1977, 1983, 1984 1987, 1988, 2003, 2012, 2013, and 2017, 2020, 2021. The highest recorded temperature in Des Moines, Iowa during this time period (Polk County) was 108 ºF which was reached in August 1983.

Research revealed that the average monthly temperatures at the Des Moines, Iowa Station for the months of June, July, and August, are 82, 86, and 84 ºF, respectively. Based on these average monthly temperatures, the heat events that were 10 degrees or more above the average monthly temperature for June, July, and August, were considered. To further review historical occurrences of extreme heat events, the data for temperatures 10 degrees or more above normal were further analyzed to determine how many events last three days or more.

According to the USDA's Risk Management Agency, insured payments in Polk County for damages to crops as a result of heat and hot wind from 2008-2017 totaled $295,099.76 up from $6,547 from 2003-2012. Table 62 shows the insurable crop insurance claims paid in Polk County as a result of heat and hot wind. According to the USDA database, crop inurance and crop loss informtion extends only to the year 2017.

Table 62 - Claims Paid in Polk County for Crop Loss as a Result of Heat, 2008-2017

Crop Year	Crop Name	Cause of Loss Description	Insurance Paid

2013	Corn	Heat	$215,092.80
2013	Soybeans	Heat	$17,512.00
2012	Oats	Heat	$462.00
2012	Corn	Heat	$20,216.86
2012	Soybeans	Heat	$241.00
2011	Oats	Heat	$895.05
2011	Corn	Heat	$319.00
2011	Hybrid Corn Seed	Heat	$22,205.50
2011	Soybeans	Heat	$6,365.00
2011	Corn	Hot Wind	$7,228.50
2009	Oats	Hot Wind	$742.05
2008	Corn	Hot Wind	$3,820.00
		Total:	$295,099.76

Source: USDA Risk Management Agency Crop Cause of Loss Historical Data Files, https://www.rma.usda.gov/data/cause.html

Table 63 - Estimated Insurable Annual Crops Lost as a Result of Heat, 2008-2017

10-Year Drought Insurance Paid	Adjusted 10-Year Drought Losses (considering 88% insured)	Estimated Annualized Losses
$295,099.76	$335,340.64	$33,534.06

Crop Insurance Paid is from the USDA's Risk Management Agency for 2008-2017. Note: This includes crops that are insured

According to the NCEI, there were two occurrences of extreme cold between 2010 and 2023. In Febuary 2015, temperatures below 20 degrees combined with 30+ mph winds, leading to significant wind chill that caused one fatality. In February 2021, temperatures dropped as low as -17 degrees, with wind chills exceeding -40 degrees.

3.3.9.5 PROBABILITY OF FUTURE OCCURRENCE

Based on historical data from the NOAA Storm Events Database, there were 41 days of extreme cold or cold/wind chill and 2 days of extreme heat in the decade from 2014-2023, averaging 4.3 extreme temperature days per year. For this reason, extreme temperatures are considered "likely" as defined in the methodology section.

3.3.9.6 VULNERABILITY

Table 64. Potential Impacts of Extreme Temperatures on Community Lifelines

Lifelines	Impact Type	Description
Food, Shelter, & Housing	 	Excessive temperature in Polk County, Iowa, presents a range of challenges impacting food, shelter, and housing. The local agriculture sector faces potential crop failures and reduced yields due to temperature stress, affecting food supply and the economy. Livestock well-being becomes a concern with risks of climate-induced productivity losses. High and low temperatures increase energy demand for cooling systems, potentially straining housing affordability as utility bills rise. The safety and comfort of housing are affected, especially in homes lacking proper insulation or ventilation. Vulnerable populations, including the elderly and those with health conditions, face heightened risks, necessitating access to cooling or heating centers and suitable housing.
Health & Medical		Excessive temperatures pose significant risk to anyone exposed for sustained periods of time. Heat exhaustion and hypothermia are common in regions that often face long periods of extreme temperature.
Energy		Extreme temperatures in Polk County, Iowa, significantly impact the energy sector by intensifying the demand for cooling and heating systems. The surge in energy consumption places strain on local power grids, leading to potential power outages and increased energy costs for residents and businesses. Prolonged exposure to extreme temperatures stresses energy infrastructure, necessitating maintenance and upgrades to enhance resilience.
Safety & Security		Extreme temperatures in Polk County, Iowa, pose significant challenges to safety and security across various domains. Health risks escalate, particularly among vulnerable populations, leading to an increased demand for emergency response services to address exposure-related illnesses. The strain on utility

		infrastructure during extreme heat can result in failures, including power outages, impacting residents' ability to cool or heat their homes and posing safety risks.

A) People

Prolonged exposure to high temperatures increases the risk of heat-related illnesses, ranging from mild conditions like heat cramps to severe cases of heatstroke. Dehydration becomes a concern as the body loses fluids through sweating, leading to symptoms such as weakness and dizziness. Individuals with respiratory issues may experience exacerbated symptoms, and cardiovascular stress can occur as the heart works harder to cool the body. Vulnerable populations, including the elderly and young children, are at a higher risk of heat-related complications. Prolonged exposure to low temperatures can also cause illnesses, including risk of hypothermia. Just as with heat, vulnerable populations are less able to handle the impacts of extreme cold, and are at higher risk of complications.

B) Systems

Extreme temperatures pose a substantial threat to critical systems vital for community well-being. Energy systems, including power grids, face increased demand from heating and cooling, potentially leading to infrastructure strain, power outages, and challenges in maintaining a stable energy supply. Water and wastewater systems are affected by heightened demand, contributing to water scarcity and impacting both supply and management. Transportation infrastructure, such as roads and bridges, may experience stress, posing safety hazards and requiring maintenance. Public health systems are strained with a rise in heat- or cold-related illnesses, leading to increased demand for emergency services and potential challenges for healthcare facilities. Agriculture and food systems face risks, impacting local production and potentially leading to food supply challenges.

C) Structures

The primary impact of extreme temperature on structure is to bridges and other road infrastructure; prolonged exposure to extreme temperature and rapid temperature changes can strain these facilities, reducing their useful life.

D) Natural, Historic, and Cultural Resources

Extreme temperatures can be dangerous for plants and animals, and can cause significant damage to crops. Freezing temperatures can potentially delay the start of the growing season. A cold snap can also be deadly for crops which have already been planted in the ground. According to the U.S. Department of Agriculture, temperatures at or below 24 ºF can cause heavy damage to most plants. At these temperatures, the ground freezes solid, with the depth of the frozen ground dependent on the duration and severity of the freeze, soil moisture, and soil type.

E) Community Activities

Extreme temperatures significantly disrupt community activities, introducing challenges across various domains. Outdoor events, festivals, and recreational activities face limitations or cancellations, impacting community engagement and social interaction. Sports practices, games, and physical activities are affected as health risks associated with extreme tempeartures necessitate modifications and rescheduling. Outdoor venues, including parks and markets, experience reduced attendance due to discomfort and health concerns, affecting local businesses. Tourism can also be impacted, leading to decreased participation in cultural and arts events. Traditional community celebrations and fairs may need adaptation to ensure the well-being of participants

Existing Development

Extreme temperatures can strain electrical systems through increased demand for heating or cooling, which can lead to power outages. Those power outages can lead to the failure of climate control systems, which can impact existing structures and their contents. Extreme heat can buckle or warp asphalt-paved roads, parking lots, and drieveways.

Future Development

The Des Moines metropolitan area is one of the fastest growing Midwest metros, with about 33 new residents moving in each day. Population growth can result in increases in the age-groups that are most vulnerable to extreme heat. Population growth also increases the strain on electricity infrastructure, which will worsen as development continues.

Climate Change

Extreme temperatures, intensified by climate change, pose multifaceted challenges for Polk County. Climate change is expected to lead to increased frequency and severity of extreme temperature events, increasing associated risks.

Hazard Risk Score

Table 65. Extreme Temperature Probability and Health Impact Ratings

Health Severity	Community Impact	Public Health System Impact	Healthcare System Impact	Total Health Hazard Score	Probability
2	2	2	2	8	Occasional

3.3.10 FLASH FLOODING

3.3.10.1 DESCRIPTION

Flash flooding is an extremely dangerous form of flooding – as the name implies, flash flooding can rapidly reach full peak in only a few minutes and allows little or no time for protective measures to be taken by those in its path. Flash flood waters move at very fast speeds and can move boulders, tear out trees, scour channels, destroy buildings, and obliterate bridges. Flash flooding often results in higher loss of life, both human and animal, than slower developing river and stream flooding.

A flash flood is an event that occurs when water levels rise at an extremely fast rate as a result of intense rainfall over a brief period, sometimes combined with rapid snowmelt, ice jam release, frozen ground, saturated soil or impermeable surfaces. Most flash flooding is caused by slow-moving thunderstorms or thunderstorms repeatedly moving over the same area. Ice jam flooding is a form of flash flooding that occurs when ice breaks up in moving waterways, and then stacks on itself where channels narrow. This creates a natural dam, often causing flooding within minutes of the dam formation.

In certain areas, aging storm sewer systems are not designed to carry the capacity currently needed to handle the increased storm runoff. Typically, the result is water backing into basements, which damages mechanical systems and can create serious public health and safety concerns. This combined with rainfall trends and rainfall extremes all demonstrate the high probability, yet generally unpredictable nature of flash flooding in the planning area.

3.3.10.2 LOCATION

Flash flooding occurs in those locations of the in the planning area that are low-lying and/or do not have adequate drainage to carry away the amount of water that falls during intense rainfall events. According to NCEI, many jurisdictions in Polk County have experienced at least one instance of flash flooding between January 1, 1996 and December 31, 2022. Table 66 provides the number of flash flood events by location for 117 flash flood events documented by the NCEI for the 26-year period; 34 of these events occurred since 2018 when the last update of this plan was created. The specific location of each flash flooding event was determined by the National Weather Service at the time of the event; please note that many of these locations are small, unincorporated communities that have since been incorporated into other municipalities.

Table 66. NCEI Flash Flood Events by Location 1996-2022

Location	Number of Flash Flood Events
Altoona	1
Ankeny	14
Avon	2
Capitol Heights	4
Clover Hills	2
Des Moines	25
Des Moines Ekman ARP	1
Des Moines INTL	4
Dodge FLD ARPT	1
Elkhart	6
Enterprise	1
FT Des Moines	4
Grimes	5
Hastie	2

Herrold	1
Lovington	7
Mitchellville	1
Norwoodville	1
Oralabor	3
Polk City	3
Polk County (Countywide)	1
Polk County (North Portion)	2
Polk County (South Portion)	1
Rider	3
Santiago	2
Saydell	1
Saylorville	1
Swanwood	2
Urbandale	8
West Des Moines	5
Windsor Heights	1
Youngstown	2

Source: NCEI Storm Events Database: https://www.ncdc.noaa.gov/stormevents/ Note: The locations in the table are directly identified by the National Oceanic and Atmospheric Administration and listed as being within Polk County, Iowa.

Additionally, specific areas reported to be prone to flash flooding and/or included in descriptions of previous impacts are provided by jurisdiction below:

Unincorporated County: Vandalia Rd. and SE 42nd Street; Lovington Area—Intersection of Beaver Drive and Valdez Drive and Merle Hay Road;

Altoona: NE 9th Street; NE 38th at 24th Street near the 6th Ave SE intersection

Ankeny: North Ankeny Blvd between 5th & 9th; SE Cortina Drive near SE Shurfine Drive; 400 Block of NE Delaware; SE National Drive & SE Delaware; flash flooding of Rock Creek and Four Mile Creek can cause damages/disruptions within the City of Ankeny; Swanwood Area—Delaware Ave. north of Oralabor Rd.

Clive: Stonegate Plat One (between Beechwood Avenue and Buena Vista Drive) resulting in storm sewer backup and stormwater detention basin overtopping causing inundation in several walk-out homes; Verona Hills Plat 1 (between Winston Circle and Aurora Court) resulting in stormwater detention basins overtopping and creating erosive uncontrolled release; Verona Hills Plat 3 (drainageway running along Alices Road) resulting in storm sewer backup and stormwater detention basins overtopping causing inundation in several walk-out homes; Tanglewood Drive (between NW 167th Street and NW 1668th Court) resulting in an overwhelmed emergency pond overflow and approximately 12 inches of ponding at the street intersection restricting neighborhood access; Swanson Boulevard (between NW 92nd Street and NW 94th Street) resulting in backwater from Walnut Creek inundating the roadway with approximately 12 inches of water preventing access to area businesses.

Des Moines: Aurora and 30th Street; 22nd and Logan; 55th and Beaver Drive; Martin Luther King and Delaware; Keo Way; US Highway 6; intersection at 63rd and Hickman Road; Douglas near Merle Hay Road; 47th and 48th Streets between Hickman and Beaver Crest; Hickman and Merle Hay Road; Martin Luther King near Douglas and Euclid Avenue; Virginia Ave near SW 12th St; Valley Gardens / Bell Ave

Grimes: South 19th Street between Little Beaver and Highway 141; James Road, 7th Street Place.

Mitchellville: I-80 east of the east mix master

Pleasant Hill/Youngstown area: 4300 block of Fairview near Dean Avenue/ 65 ramp at Vandalia Road south of Pleasant Hill

Polk City: Highway 17 and 122nd Avenue near the Des Moines River Bridge

Runnells: Low lying gravel roads between Runnells and Highway 163

West Des Moines: Intersection of Grand and 61st Street; George Flagg Parkway and southwest 30th Street near the Raccoon River; Garden Road near Waterworks Park; Valley West Drive and Westown Parkway

Windsor Heights: NW 75th Street, 76th Street, Marilyn Drive, 6900 block of School Street, Colby Park, and Hunter Circle

Des Moines International Airport: Highway 5 and Highway 28; Fleur Drive south of Army Post Road

3.3.10.3 EXTENT

As the hazard name implies, flash flooding can develop much more quickly than standard riverine flooding; the speed at which flash flooding can occur has often caught people unprepared and in vulnerable positions. The National Weather Service has various flash flooding products that are issued to the public to provide information regarding upcoming and current flash flood threats.

Table 67. National Weather Service Flooding Alerts

Product	Description
Hydrologic Outlook	Issued when a flood potential exists in a time beyond 48 hours from the start of the event.
Flash Flood Watch	A Flash Flood Watch is issued when conditions are favorable for rapidly rising water to pose an immediate hazard to life and property. It does not mean that flash flooding will occur, but it is possible.
Flash Flood Warning	A Flash Flood Warning is issued when rapidly rising water poses and immediate hazard to life and property.
A *Flash Flood Emergency* may be declared when a severe threat to human life and catastrophic damage from a flash flood is imminent or ongoing. The declaration of a *Flash Flood Emergency* would typically be found in either a Flash Flood Warning or Flash Flood Statement. People are strongly encouraged to avoid the geographic area of concern in a *Flash Flood Emergency*. The *Flash Flood Emergency* wording is used very rarely and is reserved for exceptionally rare and hazardous events.	

Source: National Weather Service, website accessed 2/14/2024
https://www.weather.gov/otx/Watch_Warning_Advisory_Definitions#Hydrologic%20Outlook

Although flash floods are somewhat unpredictable, there are factors that can point to the likelihood of flash floods occurring. Weather surveillance radar is being used to improve monitoring capabilities of intense rainfall. This, along with knowledge of the watershed characteristics, modeling techniques, monitoring, and advanced warning systems increases the warning time for flash floods.

3.3.10.4 PREVIOUS OCCURRENCES

Information from the National Centers for Environmental Information (NCEI) was obtained from 1996 to December 2022 to determine previous occurrences of flash flooding in the planning area. Table 68 provides a summary of the NCEI data, including the number of events and resulting deaths, injuries, property damage, and crop damage.

Table 68. NCEI Polk County Flash Flood Events Summary 1996-2022

Year	# of Events	# of Deaths	# of Injuries	Property Damages	Crop Damages
2022	5	0	0	$20,000	$0
2020	1	0	0	$0	$0
2019	8	0	0	$200,000	$0
2018	20	1	0	$3,960,000	$650,000
2016	4	0	0	$30,000	$0
2015	6	0	0	$80,000	$0
2014	4	0	0	$107,000	$0
2013	4	0	0	$35,000	$0
2012	2	0	0	$50,000	$0
2011	1	0	0	$250,000	$0
2010	26	1	4	$2,806,000	$75,000
2008	20	0	0	$7,327,000	$0
2007	2	0	0	$300,000	$300,000
2004	6	0	0	$400,000	$60,000
2003	2	0	0	$200,000	$0
2002	1	0	0	$150,000	$15,000
2001	1	0	0	$150,000	$10,000
1998	2	0	0	$1,150,000	$40,000
1997	3	1	0	$330,000	$20,000
1996	7	0	0	$300,000	$50,000
Total	**117**	**3**	**4**	**$17,845,000**	**$1,220,000**

Source: NCEI Storm Events Database, data accessed 2/13/2024

Of the 117 events described in the NCEI data, three were ice jam events; one in 2010, one in 2008, and one in 1997. These events resulted in three fatalities and more than $19 million in damages. Descriptions of notable flash flood events are provided below in reverse chronological order:

August 19, 2022: A surface low sinking south into the area allowed for scattered storms to develop across central Iowa in the afternoon. Steep lapse rates and deep layer shear allowed for the development of organized updrafts while low melting levels supported larger hail development. Several storms strengthened and prompted warnings, though few resulted in any severe reports. The strongest quickly developed over the Des Moines metro, where the time between a clear radar image and golf ball sized hail was just over 20 minutes. Hail pummeled the west side of the metro for nearly 30

minutes, resulting in hundreds of vehicles with significant damage. One high school in West Des Moines also reported damage to the building which resulted in water leaking into the library and a rush to protect the books. After the hail ended the storms continued to train across the metro, resulting in flash flooding a a couple of water rescues due to stranded vehicles.

June 22, 2019: Strong to severe storms and heavy rainfall moved up into Iowa from northern Missouri during the late afternoon and evening hours of the 22nd of June. Ahead of the storms, a warm front lifted into and through much of the state, bringing with it temperatures into the low to mid 80s and dew points in the low to mid 70s. Support for storms was decent with MUCAPE values of 2000+ J/kg reaching roughly the Interstate 80 corridor, effective bulk shear in the 30 to 40 kt range, and strong low level moisture transport boosting precipitable water values in excess of 1.5 to 1.75 inches.

All in all, a handful of severe storm reports (hail and wind) were seen as storms moved into the state from the south and eventually transitioned more into a rain threat that came to fruition over the eastern half of the Des Moines metro. A number of heavy rainfall amounts in excess of 2 to 4 inches were received, producing multiple flash flooding reports.

FEMA-4386-DR: Much of western and central Polk County received five to 10 inches of rain in the span of just a few hours. This event caused widespread flash flooding in Urbandale, Windsor Heights, Des Moines, West Des Moines, Ankeny, Johnston, and other communities. The National Weather Service issued a rare “Flash Flood Emergency” because of severity of the event. After the flood waters had receded more than 6,000 homes were reported to have been affected and more than 25 were destroyed. Additionally, there was one fatality reported. This event triggered a number of other hazards such as: structural fire, sinkholes, transportation incidents, infrastructure failures, and river flooding. A Presidential Disaster Declaration was declared for Polk County in August 2018, and throughout much of central Iowa.



Water inundates the intersection of 56th Street and New York Avenue after flash flooding on June 30th, 2018.
Source: Des Moines Register, 2018

June 2012: The City of Grimes reported 12 inches of rain in 3 days that caused basement flooding, bank erosion and minor storm sewer blow outs.

April 14, 2012: Street flooding reported with one to two feet in Ankeny near the HyVee and High School by 1st Street as well as 18 inches of water flowing across Delaware Ave., north of Oralabor Rd.

June 9, 2011: Four Feet of water covered Vandalia Rd. and SE 42nd Street.

FEMA-DR-1930-IA: The flash flooding associated with this event transitioned in to widespread riverine flooding. The details described below for Polk County occurred from August 4-11. Three vehicles, containing 11 people were swept into the waters of Mud Creek near Altoona in Polk County. One fatality occurred and four were injured. Evacuations took place from 3324 Hubble Ave. at an apartment complex to 3560 Douglas Avenue near a trailer Park in east Des Moines. Interstate 35 was covered by water at mile post 97 and several cars spun out in the flood waters. In Ankeny 4 to 5 inches of water covered the intersection of Crestmoor Place and Northeast 6th Street, water was 2 feet deep on Delaware Avenue in the 400 block, 18 inches of running water went across the intersection of SE 4th and Trilein; intersection of West 1st Street and SW State Street was impassable; and North Ankeny Boulevard and NE 9th Street was closed due to 16-18 inches of water. The basement walls of a house in the Avon Lakes area collapsed due to the heavy rains. In Grimes, water from the flooded creek flowed over James Road and inundated a few houses along the creek on 7th Street Place, extending to the 1800 block and 6 to 8 inches of water flowed out of a corn field and across South 19th Street between Little Beaver and Highway 141. In Des Moines, four feet of water covered the street at Aurora and 30th Street. In the Pleasant Hill/Youngstown area, flooding in the 4300 block of Fairview near Dean Avenue washed away railroad tracks and caused a derailment. In West Des Moines, water was over the road at Grand and 61st Street. In Urbandale, water flooded over the intersections of 86th and I-80, Northwest Urbandale Drive and Meredith Drive, and Douglas Avenue and Aurora Avenue. In Windsor Heights, four basement apartments and three houses were inundated with water on NW 75th Street due to the fast rising waters from North Walnut Creek. In the unincorporated county, Merle Hay had 2 feet of water over the road and the intersection was flooded at Beaver Drive and Valdez Drive.

May 12, 2010: Highway 65 ramp at Vandalia Road south of Pleasant Hill was impassable due to high water and NE 38th at 24th Street near the 6th Ave SE intersection was washed out in Ankeny.

March 10, 2010: An ice jam upstream of the Fleur Drive gauge caused water to rise rapidly, impacting George Flagg Parkway and southwest 30th Street near the Raccoon River.

December 27, 2008: An ice jam on the Raccoon River caused water levels in the Des Moines area to rise 7 feet in less than 3 hours caused water to back up over George Flagg Parkway and Garden Road near Waterworks Park. Water backed up through the storm drains and flooded some businesses on Garden Road.

June 25-26, 2008: In Des Moines, six to eight inches of water covered the road at 22nd and Logan, water was over the road at 55th and Beaver Drive, and nine inches of water was over a 300 foot area of Martin Luther King and Delaware, causing a vehicle to stall, 2.5 feet of water covered the intersection at 63rd and Hickman Road and water flowed over Douglas near Merle Hay Road; Near Mitchellville, four inches of water covered the interstate east of the east mix master. In West Des Moines, Valley West Drive and Westown Parkway had two and one half feet of water depth that drowned out a police squad car. In Polk City, water covered the road on Highway 17 and 122nd Avenue near the Des Moines River Bridge.

June 12, 2008: Court Avenue was flooded with manhole covers being described as geysers.

June 6, 2008: In Des Moines, flash flooding brought debris onto the road on Keo Way and waist high water covered the road near 47th and 48th Streets between Hickman and Beaver Crest. At the Des Moines International Airport, five feet of water was reported over Highway 5 and Highway 28 with multiple cars stalled and Fleur Drive south of Army Post Road had cars stalled with 8 to 9 inches of water on the road.

June 3, 2008: Flash flooding was reported at Hickman and Merle Hay Road and on Martin Luther King near Douglas and Euclid Avenues.

June 16, 2004: Heavy rainfall in Des Moines caused flash flooding with water flowing over 2 feet deep over US Highway 6.

November 3, 2003: Heavy rains caused water over several intersections in the Des Moines metro area. In Altoona, the heavy rains resulted in some basements flooding.

May 4, 2003: Flash flooding caused water over roads and highways as well as flooded basements in the metro area.

June 12, 2002: Flash flooding to Flash flooding took place in southern Polk County, especially in Des Moines and areas east and south. Rainfall rates were in the 2 to 3 inch per hour range. The city of Des Moines was hard hit with flooded streets. There were numerous reports of stalled vehicles with water two to three feet deep in the streets. East of Des Moines in the Runnells area, low lying gravel roads between Runnells and highway 163 were barricaded as they went under water. Damage occurred to some of the county gravel roads as well as numerous houses by basement flooding.

June 18, 1998: In Des Moines, a state of emergency was declared as water of 6 feet or greater in depth choked many of the city intersections. Hundreds of cars were stalled in the streets and many basements were flooded. Between the high winds and water, electricity was knocked out to 15,000 homes in Des Moines during the height of the storm. Damage estimates were in the hundreds of thousands of dollars in all of the flash flood counties, and over one million dollars in Polk County, where the Governor declared a state disaster. A disaster declaration was also made for Dallas County. Reports indicated that in the Des Moines metropolitan area, up to 10,000 homes had water in the basement. The city of Des Moines reported that infrastructure losses alone around $1 million.

July 24, 1997: Heavy rains mentioned above in the urban and small stream flooding caused flash flooding in Polk County, specifically in Des Moines. Walnut Creek rose quickly above flood stage. Serious flooding occurred in low areas of the city with rush hour traffic snarled by closed roads that were under water.

February 19 and 20, 1997: Ice jams occurred along the lower reaches of the Raccoon River. On the 19th, a fatality occurred due to an ice jam suddenly breaking. The water released from the jam swept a car off the road on the west side of Des Moines, drowning the occupant. On the 20th, a major ice jam, 12 miles in length, began at the 63rd street bridge in West Des Moines. The river went slightly above flood stage there before it broke free. The ice flowed down the river where it once again became jammed near the mouth of the river. It caused a rapid rise in the river level to nearly 2 feet above flood

stage. Roads along the river were closed by the high water and ice. Heavy equipment was brought in to move the large chunks of ice off the roads before they could be opened.

3.3.10.5 PROBABILITY OF FUTURE OCCURRENCE

The frequency of past events is used to gauge the likelihood of future occurrences of flash flooding in Polk County. The events of flash flooding as documented by the NCEI were used to assess the number of flash flooding events which occurred in the planning area. There were 116 documented instances of flash flooding somewhere in the planning area during the period from 1996 to 2022 (26 years). This translates to flash flooding somewhere in the planning area approximately 4.5 times in any given year. Therefore, the probability of flash floods occurring Polk County is assessed to be “highly likely” in any given year.

3.3.10.6 VULNERABILITY

Table 69. Potential Impacts of Flash Flooding on Community Lifelines

Lifelines	Impact Type	Description
Water & Wastewater Systems		Flooding can contaminate water supplies and damage water infrastructure, leading to shortages and health hazards. Wastewater treatment facilities may also be overwhelmed or damaged, increasing the risk of waterborne diseases.
Food, Shelter, & Housing	 	Flooding can lead to the displacement of people, necessitating immediate shelter solutions. The disruption in supply chains can affect the availability and distribution of food, especially fresh produce.
Health & Medical		There is a heightened risk of injuries during floods, as well as increased potential for waterborne and vector-borne diseases. Healthcare facilities might be directly affected by floods, impacting their operational capabilities.

Lifelines	Impact Type	Description
Communications		Communication networks may be disrupted, which can hinder the coordination of rescue and relief efforts as well as the dissemination of important information to the public.
Energy		Flooding can cause power outages by damaging electrical infrastructure. Fuel supply may also be disrupted, affecting not just transportation but also heating and power generation.
Safety & Security		Emergency services are crucial during flooding for rescue operations and maintaining public order. Flooding can also increase the risk of accidents and infrastructure failures, such as dam or levee breaches.
Transportation		Floods can damage roads, bridges, and rail lines, severely limiting mobility and access. This disruption impacts not just daily commutes but also the delivery of essential goods and services.

A) People

The rapid pace at which flash flooding can occur means that the hazard is of particular concern for people who have a limited ability to quickly reach safety. Individuals at an increased risk of this hazard include the elderly, young children, people with a disability, and individuals who lack access to a vehicle. Additionally, people who have not learned to swim are particularly vulnerable if they cannot avoid the flood waters. Location also contributes to vulnerability, and anyone living in a flood prone or low-lying area is at a higher risk of experiencing a flash flooding event. There is potential for loss of life if motorists drive into moving water. However, public education campaigns have helped to educate citizens about not driving through moving water.

B) Structures

Building damage is generally limited to water in basements where rain is too intense for drainage systems and natural drainage to carry water away from the structure. In addition, when

combined storm/sanitary sewer systems are overloaded, this can result in sewer back-up. Standing water in structures may cause electrical faults which can potentially result in fires. Although flash floods are generally of short duration, standing water can degrade building materials and lead to mold.

C) Systems

Flash flooding can cause power, water, and gas outages; disrupt transportation routes and the movement of commercial goods; pollute drinking water systems; and damage or destroy communications infrastructure. These impacts can disrupt other community services like trash/recycling collection, law enforcement, and medical care. Nearly all transportation modes (e.g., roads, transit, aviation, etc.) are vulnerable to the impacts of flash flooding. Polluted drinking water can force communities to issue boil orders and distribute bottled water. Response efforts may be hampered if communication is unreliable due to damaged cell towers and other communications infrastructure.

D) Natural, Historic, and Cultural Resources

Flooding has long been a major challenge for many historic properties. Changing weather patterns and more frequent extreme weather events are some of the factors increasing the risk of flooding events, both in terms of their frequency and magnitude. Some historic properties that have never flooded before may now be exposed to this risk, and those that flooded infrequently in the past may experience more instances of flooding reaching higher levels than ever before. In fact, the Secretary of the Interior adopted Guidelines on Flood Adaptation for Rehabilitating Historic Buildings in response to flooding. Flash flooding can also quickly inundate natural and community assets such as parks and nature preserves, as well as causing severe environmental problems including landslides and mudslides.

E) Community Activities

Flash flooding events can cause widespread cancellations, postponements, and relocations of community events and activities due to direct or indirect damage to hosting locations. Concerns about waterborne bacteria and structural damage may result in prolonged disruptions to community activities if suitable alternative sites cannot be found.

Existing Development

Existing development faces significant risk from flash flooding. Polk County has experienced heavy rainfall events which quickly damaged residential structures. Just one inch of standing water can cause $25,000 in damage, and standing water can lead to rot and other phenomena which directly jeopardizes the integrity of structures, and mold and other fungi can develop and create health hazards. Heavy rainfall is more likely to cause flash flooding if a drought occurred recently; dry, sunbaked soil tends to be less capable of quickly absorbing moisture. Planning team members noted during the process of updating this plan that Iowa State Law SF-455 restricts local and community regulation of stormwater and topsoil, which has made it difficult to take action to reduce this risk.

Future Development

Future development may increase the risk of flash flooding in the planning area. When land use changes from fields or woodlands to roads and parking lots, it loses its ability to absorb rainfall. Such urban development, with significant impervious surface, has been known to increase runoff two to six times over what would occur on natural terrain. If measures are not taken to limit or slow runoff in developing areas, flash floods may become more frequent. In certain areas, aging storm sewer systems were not designed with enough capacity to handle increased storm runoff. Then again, other storm sewers built in the past may convey water too quickly and efficiently to streams and rivers resulting in peak flows that result in flood events downstream.

Climate Change

Available data indicates that climate change may be increasing the annual precipitation in the planning area. Research incorporated in the 2023 Iowa State Hazard Mitigation Plan indicates that annual rainfall totals are expected to increase by 1-4 inches by 2050, and heavy precipitation events are likely to become more common.

Hazard Risk Score

Table 70. Flash Flooding Probability and Health Impact Ratings

Health Severity	Community Impact	Public Health System Impact	Healthcare System Impact	Total Health Hazard Score	Probability
2	3	1	2	8	Highly Likely

3.3.11 GRASS OR WILDLAND FIRE

3.3.11.1 DESCRIPTION

Grass or wildland fires, often referred to simply as wildfires, are uncontrolled fires that occur in natural areas such as forests, grasslands, or shrublands. These fires can be sparked by various sources, including lightning strikes, human activities like campfires or discarded cigarettes, or even volcanic eruptions. Wildfires spread rapidly, fueled by dry vegetation, high winds, and hot temperatures. They can engulf vast areas of land, consuming everything in their path, including trees, plants, wildlife, and sometimes even structures like homes or buildings located in or near the affected areas. Wildfires are a natural part of many ecosystems, playing a crucial role in clearing dead vegetation and promoting new growth, but they can also pose significant risks to human lives, property, and the environment when they occur near populated areas or during periods of drought or extreme weather. Wildfires are frequently associated with lightning and drought conditions, as dry conditions make vegetation more flammable. As new development encroaches into the wildland/urban interface more and more structures and people are at risk. On occasion, ranchers and farmers intentionally set fire to vegetation to restore soil nutrients or alter the existing vegetation growth. Also, individuals in rural areas frequently

burn trash, leaves and other vegetation debris. These fires have the potential to get out of control and turn into wildfires.

The risk of wildfires is a real threat to landowners across the State. The National Weather Service monitors the conditions supportive of wildfires in the State on a daily basis so that wildfires can be predicted, if not prevented.

The risk factors considered are:

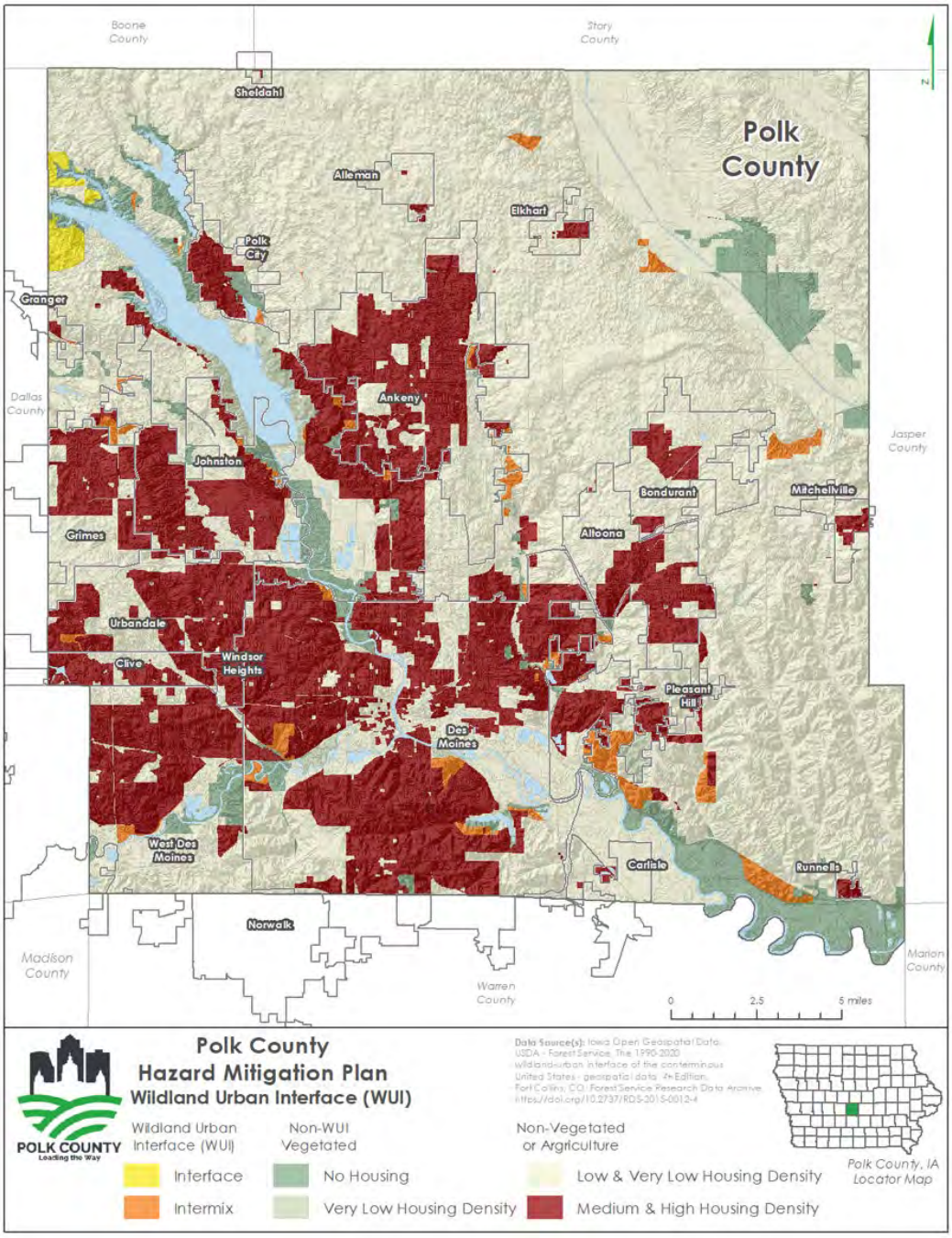
- High temperature
- High wind speed
- Fuel moisture (greenness of vegetation)
- Low humidity
- Little or no cloud cover

Iowa's urban/rural interface (areas where development occurs within or immediately adjacent to wildland, near fire-prone trees, brush, and/or other vegetation), is growing as metro areas expand into natural forest, prairies and agricultural areas).

3.3.11.2 LOCATION

Wildland/Grass fires are most likely to occur in the Wildland Urban Interface (WUI). This is the area where houses meet or intermingle with undeveloped wildland vegetation. Within the WUI, there are two specific areas identified: 1) Interface and 2) Intermix. The interface areas are those areas that abut wildland vegetation and the Intermix areas are those areas that intermingle with wildland areas. As can be seen in Figure 61**,** Polk County has very few areas of WUI Interface and WUI Intermix. The WUI Interface areas are limited to the unincorporated areas in the very northwest corner of the County along the northern portion of Saylorville Lake. The WUI Intermix areas are slightly more prevalent, sprinkled throughout the County.

Figure 61 - Polk County Wildland Urban Interface



3.3.11.3 EXTENT

Fire severity refers to the effects of a fire on the environment, typically focusing on the loss of vegetation both above ground and below ground but also including soil impacts. There are three categories of fire severity:

- Low: A fire that has limited effect on overstory trees
- Moderate: A fire producing variable, moderate effects on overstory trees, averaging 30-80% of the vegetation killed, and/or moderate soil exposure.
- High: A fire producing a high percent of overstory tree mortality (>80%) and/or extensive mineral soil exposure.

The worst wildfire in Iowa's history was the great fire of 1910, which burned more than three million acres and led to 86 fatalities, and was a "high" severity fire. Wildfires of all three levels of severity are possible in Polk County.

3.3.11.4 PREVIOUS OCCURRENCES

There have been three notable grassland or wildland fires for Polk County since 2017:

- According to WHO Channel 13, on November 25, 2017, a grassland fire occurred near Runnels and the Des Moines River, which required response from multiple agencies. Though the impacts of the fire was low, the fire raged on for several hours and took substantial amounts of resources.
- According to the data center with the Des Moines Register, on March 30th , 2019, a wildfire consumed around 3 acres in the southern Polk County which was later found to be accidentally started by a resident.
- Most recently, on March 1st, 2024, multiple fire crews responded to a grassland fire near Yellow Banks Park. We Are Iowa Plus new outlet stated that local residents said there had been fires off and on in that area the previous 4 or 5 days. The cause of the fires is unknown. On the same date, Clive experienced a grassland fire in Greenbelt just west of NW 100th Street. The Clive Greenbelt is approximately 450 acres of native woodland, prairie, and wetlands immediately adjacent to significant private buildings. This fire was found to be the result of improper use of fireworks.

3.3.11.5 PROBABILITY OF FUTURE OCCURRENCE

The probably of future occurrence is determined to be "occasional" due to the infrequency of these events. However, although these events are infrequent, it is important to note that if a grassland or wildfire does occur, the impacts on Polk County can be substantial.

3.3.11.6 VULNERABILITY

The urban fire departments in the County are equipped to handle smaller-scale brush/grass fires, which are generally extinguished before much damage occurs. Areas that are most vulnerable to

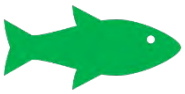
wildfire are the intermix and interface areas. Table 71 identifies the total number of acres in each of these zones in Polk County.

Table 71 - Wildland Urban Interface/Intermix Acreage by Jurisdiction

Jurisdiction	Intermix (Acreage)	Interface (Acreage)
Alleman	0	0
Altoona	0	0
Ankeny	127.11	0
Bondurant	0	0
Clive	0	0
Delaware Township	272.23	0
Des Moines	1,191.54	0
Elkhart	0	0
Grimes	1.87	0
Johnston	73.19	0
Mitchellville	0	0
Pleasant Hill	42.69	0
Polk City	54.69	0
Polk County Unincorporated	3,749.50	1,326.61
Runnells	0	0
Saylor Township	7.43	0
Urbandale	0	0
West Des Moines	173.5	0
Windsor Heights	0	0
Total	**5,693.75**	**1,326.61**

Table 72. Potential Impacts of Grass or Wildland Fire on Community Lifelines

Lifelines	Impact Type	Description
Safety & Security		Grass and wildland fire incidents pose immediate threats to public safety, requiring prompt evacuation and emergency response. Law enforcement and fire response teams play a crucial role in securing the area, managing the situation, and preventing further harm.
Health & Medical		Exposure to fires of any kind can lead to acute and chronic health issues, and severe burns or death. Medical facilities need to be prepared to treat victims of such exposure, which may require specialized treatment and specialized medical facilities with burn units capable of providing the care necessary for such exposure.

Housing & Building Infrastructure		Grass fires or wildland fires, depending on the fuels to support the fires in the area, can cause significant damage or destroy houses completely, even if briefly exposed to the fire. Houses that are exposed often must undergo complete reconstruction or substantial renovation to infrastructure.
Economic Stability		The economic impacts include the immediate costs of emergency response, cleanup, and recovery of property damage. These events often cause major disruption to local businesses, especially businesses in agriculture who lose substantial amounts of crops and other revenue generating losses.
Environmental & Ecological Systems		Grass and wildland fires have potential to cause significant impacts on the environment and ecological systems, including habitat destruction, impacts to nutrient cycling in soils, air quality for species within, and impacting behaviors and patterns of wildlife within.

A) People

The most devastating consequences of wildfire include the loss of lives and injuries, as rapidly spreading fires pose significant threats to those in their path. The destruction of homes, businesses, and infrastructure leads to substantial property damage, resulting in financial losses and the need for extensive recovery efforts. Evacuation orders disrupt daily lives, causing temporary or prolonged displacement with associated challenges in housing and resource access. The degradation of air quality due to wildfire smoke poses health risks, particularly for vulnerable populations. Economic disruption occurs as local businesses are damaged or forced to close, leading to job losses and reduced income. Critical infrastructure damage hinders recovery efforts, while the social fabric of communities may experience strain or resilience. Emergency response costs strain local budgets, and individuals and businesses may face challenges in obtaining insurance coverage or experience significant premium increases. Addressing these multifaceted impacts requires coordinated efforts in emergency response planning, community resilience initiatives, mental health support, and sustainable land management practices to reduce the risk and severity of wildfires.

B) Structures

Critical infrastructure, including power lines, bridges, and roads, can suffer damage or complete destruction, disrupting daily life and complicating emergency response efforts. Businesses, factories,

and commercial structures face operational disruptions, income loss, and potential long-term economic consequences for the broader community. Firefighters focus on protecting structures, employing strategies like creating firebreaks, but the risk of structure loss remains significant. Even after flames are extinguished, post-fire hazards in weakened structures, damaged utilities, and potential debris flow require careful assessment and remediation efforts. The destruction of structures has profound and lasting economic implications for communities, necessitating extensive rebuilding and reconstruction efforts.

C) Systems

Grass and wildland fires can damage any nearby infrastructure, including utility lines, roads, and communications towers. Often times damage to these utilities cause major delay and disruption as recovery and restoration can take up to weeks or months after significant fire events.

D) Natural, Historic, and Cultural Resources

Wildfires have multifaceted impacts on natural, historical, and cultural resources, shaping landscapes and communities in profound ways. The intense heat and rapid spread of wildfires can lead to the destruction of ecosystems, including the loss of diverse plant and animal species. Valuable habitats may be altered or entirely consumed, disrupting the delicate balance of local ecosystems. Wildfires can damage or destroy archaeological sites, historic structures, and artifacts. Moreover, the loss of vegetation and altered landscapes can impact water sources, affecting both the environment and the communities that rely on these resources. Preserving and restoring these resources in the aftermath of wildfires often requires coordinated efforts between environmental, historical preservation, and community-focused initiatives.

E) Community Activities

Community activities may be disrupted if grass or wildland fire incidents result in evacuations. Additionally, buildings may be exposed to burns or destroyed, which can require cancellation, postponement, or relocation of community activities.

Existing Development

Wildfires can be responsible for extensive damage to crops, the environment and occasionally residential or business facilities. Homes built in rural areas are more vulnerable since they are in closer proximity to land that is burned and homeowners are more likely to burn trash and debris in rural locations. The vulnerability of structures in rural areas is exacerbated due to the lack of hydrants in these areas for firefighting and the distance required for firefighting vehicles and personnel to travel to respond. Potential losses to crops and rangeland are additional concerns.

Future Development

Grass and wildland fires can pose significant challenges to future development. The vulnerability of critical infrastructure, including roads and utility systems, must be considered, with a

focus on fire-resistant designs and materials. Properties in fire-prone areas are at risk of damage or destruction, necessitating future development strategies that prioritize defensible space planning, fire-resistant landscaping, and building materials to mitigate property loss. Considering the potential increase in insurance costs for property owners, future development should explore ways to incentivize fire-resistant construction.

Climate Change

Climate change is exerting a substantial impact on grass and wildland fires in Polk County, Iowa. Rising temperatures contribute to drier conditions, increasing the susceptibility of vegetation to ignition and creating favorable circumstances for fires. Altered precipitation patterns, coupled with prolonged dry periods and drought conditions, elevate the risk of grass and wildland fires, as reduced moisture content in vegetation serves as fuel. The lengthening of the fire season due to climate change allows for extended periods with conducive conditions for ignition and fire spread. Changes in vegetation types and density, influenced by climate change, may alter fuel loads, affecting fire behavior and making certain areas more susceptible to ignition. More intense weather events associated with climate change, such as heatwaves and storms, contribute to conditions conducive to fire ignition or lightning strikes, further increasing the risk of fires.

Hazard Risk Score

Table 73. Grass or Wildland Fire Probability and Health Impact Ratings

Health Severity	Community Impact	Public Health System Impact	Healthcare System Impact	Total Health Impact Score	Probability
0	0	0	0	0	Occasional

3.3.12 HAZARDOUS MATERIALS INCIDENT

3.3.12.1 DESCRIPTION

A hazardous substance is one that may cause damage to persons, property, or the environment when released. Hazardous material releases can contaminate air, water, and soils and have the potential to cause injury or death. Dispersion can take place rapidly when released materials get carried by water and wind. While often accidental, hazardous materials releases can occur as a result of human carelessness, intentional acts, or natural hazards. When caused by natural hazards, these incidents are known as secondary events.

Hazardous materials are substances that are considered severely harmful to human health and the environment, as defined by the United States Environmental Protection Agency (EPA) Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). The EPA designates nearly 800 substances as hazardous and identifies many more as potentially hazardous due to their characteristics and the circumstances of their release.[15] Therefore, it is critical for

[15] US EPA, OLEM. "CERCLA Hazardous Substances Defined." Overviews and Factsheets, April 10, 2019. https://www.epa.gov/epcra/cercla-hazardous-substances-defined.

communities to understand the hazardous materials in their jurisdiction and take all reasonable steps to educate the public, reinforce safe handling, and prepare and practice a robust response to incidents involving hazardous materials.

Hazardous materials can include toxic chemicals, infectious substances, biohazardous waste and any materials that are explosive, corrosive, flammable or radioactive. The U.S. Department of Transportation divides hazardous materials into 9 categories, and these are illustrated in Figure 62.

Figure 62. U.S. DOT Classes of Hazardous Materials

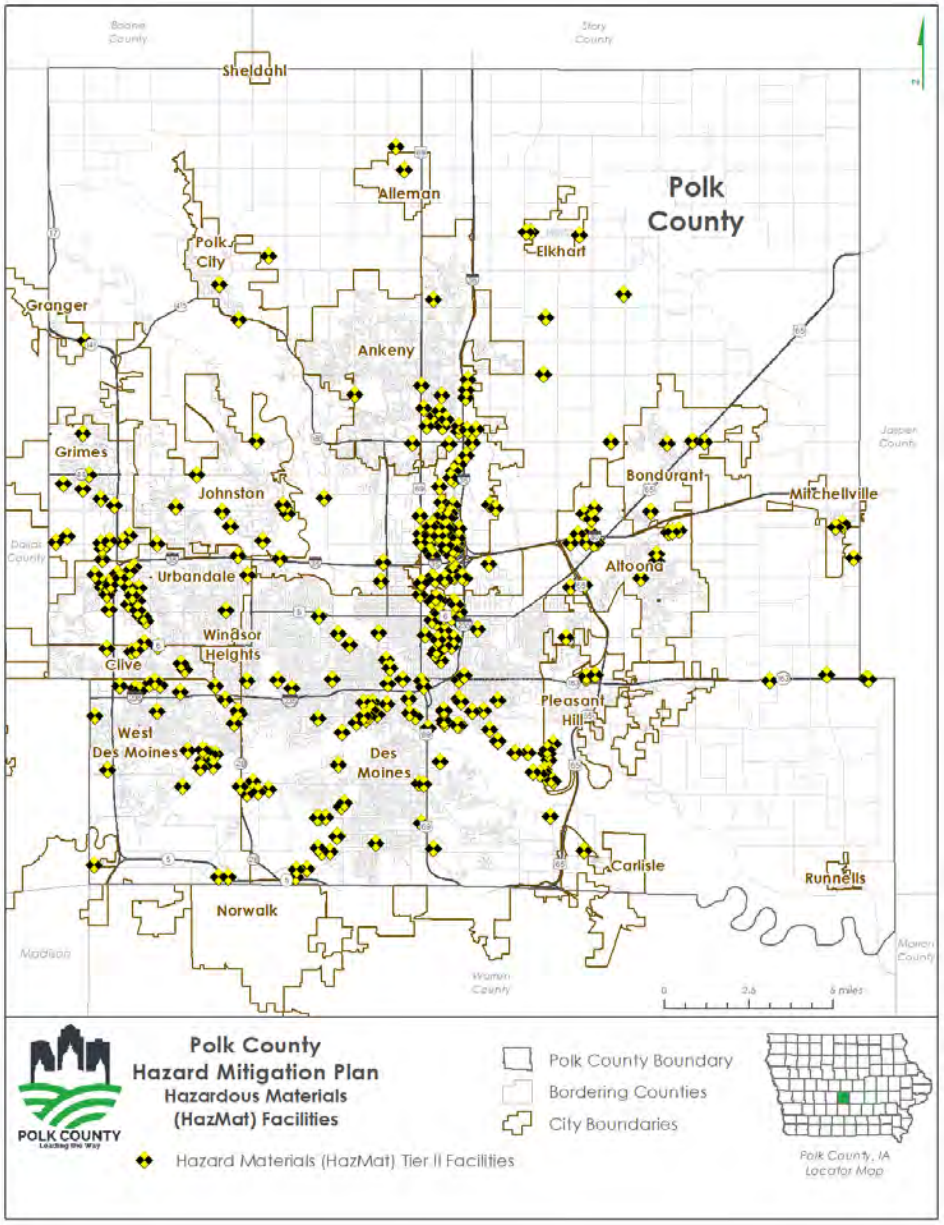


3.3.12.2 LOCATION

An uncontrolled release of hazardous materials can occur virtually anywhere hazardous materials are present, including along transportation routes and at fixed-site facilities where hazardous materials are manufactured, used, or stored. So, all jurisdictions are considered to have at least some vulnerability to this hazard. People, pets, livestock, and vegetation in close proximity to facilities producing, storing, or transporting hazardous substances are at higher risk. Populations downstream, downwind, and downhill of a released substance are also at a higher risk of exposure to hazardous materials releases. Generally, hazardous materials incidents occur at a fixed site (storage, production, etc.), during transportation via a vehicle, or along pipelines.

Fixed Hazardous Materials Incident - A fixed hazardous materials incident is the accidental release of chemical substances or mixtures during production or handling at a fixed facility. In Polk County, many Tier II facilities are located in close proximity to major transportation routes including Interstate 80 and Interstate 35. According to the Iowa Department of Natural Resources, as of 2022, there were 337 sites in Polk County designated as Tier II Facilities under the Superfund Amendments and Reauthorization Act. Figure 63 shows the approximate locations of Tier II facilities in Polk County.

Figure 63. Tier II Facilities in Polk County



Transportation Hazardous Materials Incident - A transportation hazardous materials incident is the accidental release of chemical substances or mixtures during transport. Transportation-related hazardous materials incidents in Polk County can occur during rail transport or highway transport. Accidents involving rail shipments of hazardous materials typically fall into four general categories: track deterioration, equipment failures, human error, and other causes. Highway accidents involving hazardous materials pose a great potential for public exposure. Both nearby populations and motorists can be impacted and become exposed by accidents and releases. Generally speaking, the volume of

hazardous materials transported is greater in rail transport than highway transport due to the higher capacity in rail cars.

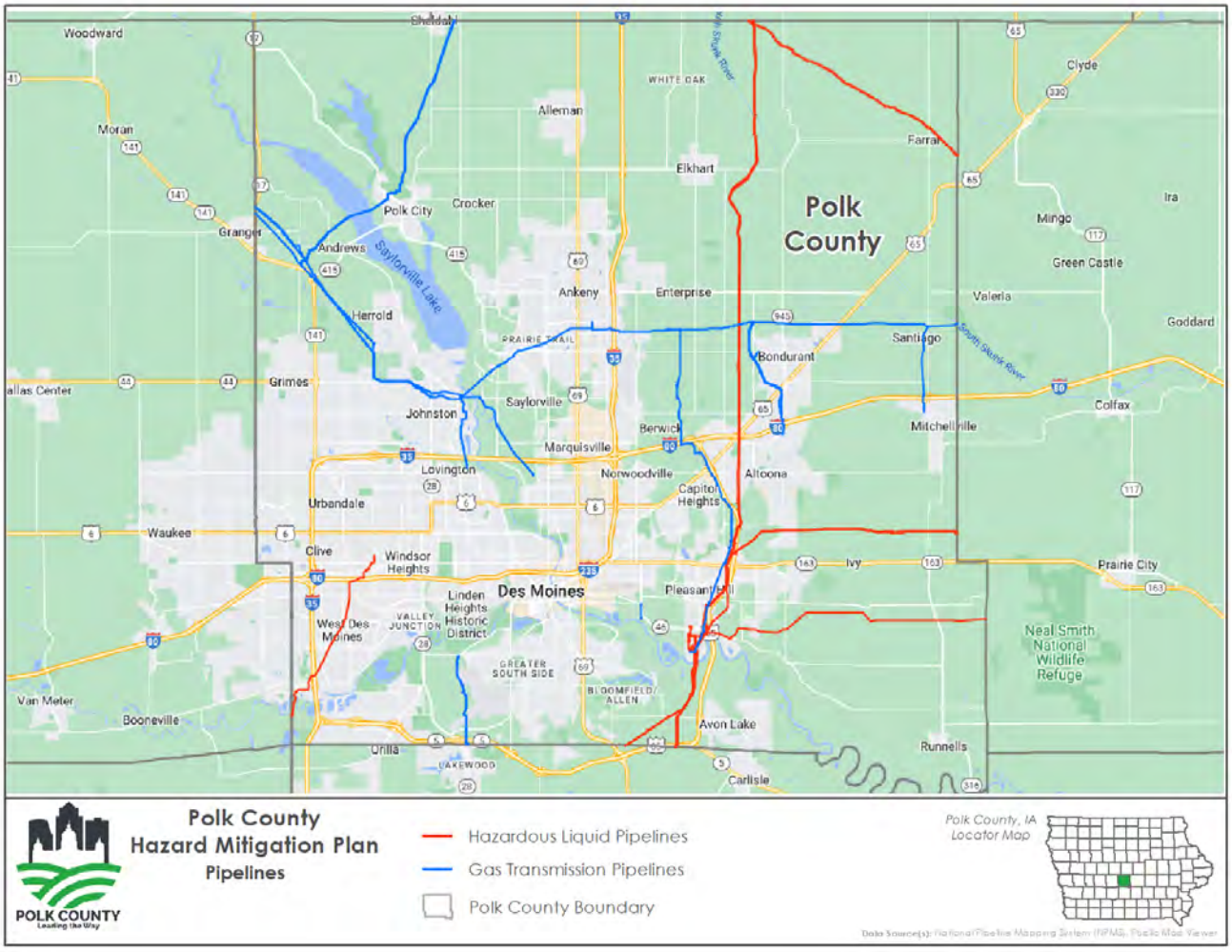
The location of Polk County and its extensive transportation network underscores the importance of transportation not only in the State, but nationwide. The interstate corridors of I-35 and I-80 are critical trade corridors for national freight movements, and segments of I-35 and I-80 within Polk County and the Des Moines metropolitan area have truck traffic counts above 13,000 vehicles per day. Other roadways within this area that experience higher truck volumes include U.S. 6, Iowa 141, and Iowa 160. Many other U.S. and state highways within Polk County and throughout the eight county area that comprise the Central Iowa Regional Transportation Planning Alliance (CIRTPA) also play an important role in freight movement across Iowa and the nation. Additionally, the area contains several rail corridors which are used by multiple major carriers to move hundreds of thousands of tons of freight each year.

The National Hazardous Materials Route Registry (NHMRR) is a listing, as reported by States and Tribal governments, for all designated and restricted roads and preferred routes for highway transportation of radioactive materials. In Iowa, the preferred routes for transportation of radioactive materials are Interstate 880, Interstate 29, Interstate 280, Interstate 80, and Interstate 35. However, it is important to acknowledge that deviations from NHMRR preferred routes are permitted when security concerns arise.

Pipeline Incident - A pipeline transportation incident occurs when a break in a pipeline creates the potential for an explosion or leak of a dangerous substance (oil, gas, etc.) possibly requiring evacuation. An underground pipeline incident can be caused by environmental disruption, accidental damage, or sabotage. Incidents can range from a small, slow leak to a large rupture where an explosion is possible. Inspection and maintenance of the pipeline system along with marked gas line locations and an early warning and response procedure can lessen the risk to those near the pipelines.

According to the Pipelines and Hazardous Materials Safety Administration, there are approximately 250 miles of gas and hazardous liquid pipelines in Polk County. Figure 64 provides the locations of pipelines in Polk County. The data for this map consists of gas transmission pipelines and hazardous liquid trunklines. It does not contain gathering or distribution pipelines, such as lines which deliver gas to a customer’s home. Therefore, not all pipelines in the County will be visible.

Figure 64. Pipelines in Polk County



3.3.12.3 EXTENT

Hazardous materials vary greatly in the types of health risks they pose to humans. Individuals who are exposed to hazardous materials may face one or more of the following health risks:

Thermal harm: Thermal harm results from exposure to extreme temperatures. Thermal injuries can be external (from contacting, or being in close proximity to, a fire or other heat source) or internal (from inhaling fumes or heated air). Thermal injuries can also include frostbite from contact with low-temperature hazardous materials.

Radiological harm: Radiological harm results from exposure to radioactive materials. Different types of radiation have different energy levels, and not all types are dangerous. The most harmful types of radiation cannot be seen, felt, or smelled. The radiation that poses a threat to humans is ionizing radiation, which is strong enough to strip electrons from atoms and can damage living cells and DNA. Receiving a high dose of ionizing radiation in a short period of time can result in Acute Radiation

Syndrome, while lower doses can increase the likelihood of cancer and other longer-term health conditions.

Asphyxiation: Asphyxiation results from exposure to materials that reduce oxygen to levels that may cause suffocation. Asphyxiation typically occurs in confined spaces or with extremely concentrated forms of simple asphyxiants. Asphyxiants displace so much oxygen from the ambient atmosphere that the lungs can't supply enough oxygen to the body and the victim suffocates. Many asphyxiants (e.g., carbon dioxide, methane) are odorless and tasteless (unless odorants are added).

Chemical harm: Chemical harm results from exposure to chemicals, including poisons and corrosives. Injuries and illness vary by material. Chemical agents are classified according to the potential severity of their effects. More information on the effects of exposure to different chemicals is available on the Department of Health and Human Services (HHS) Chemical Hazards Emergency Medical Management (CHEMM) website.

Etiological (biological) harm: Etiological (or biological) harm results from exposure to biological materials, which include bacteria, viruses, and biological toxins. Symptoms of etiological harm are often delayed because the pathogens often require time to multiply sufficiently to cause illness in the person carrying the pathogen.

Mechanical harm: Mechanical harm results from exposure to, or contact with, fragmentation or debris scattered because of a pressure release, explosion, or boiling liquid expanding vapor explosion. Sources of injuries can occur fragmentation and flying debris, blast overpressure, and secondary blast injuries (such as being thrown into other objects). The degree of mechanical harm is closely related to the size of the blast and distance between the epicenter and the victim(s).

With a hazardous material release, there are multiple potentially exacerbating or mitigating circumstances that will affect its severity or impact. Mitigating conditions are precautionary measures taken in advance to reduce the impact of a release. Primary and secondary containment or shielding by sheltering-in-place protects people and property from the harmful effects of a hazardous material release. Exacerbating conditions, characteristics that can enhance or magnify the effects of a hazardous material release include:

- Weather conditions that affect how the hazard occurs and develops
- Micro-meteorological effects of buildings and terrain that alters dispersion of hazardous materials
- Non-compliance with building or fire codes and maintenance failures such as fire protection and containment features
- Type of material(s) released
- Distance from emergency response teams

- Training of emergency response teams/familiarity with hazardous material(s) properties
- Accessibility of area

The areas within closest proximity to the releases are generally at greatest risk, yet depending on the agent, a release can travel great distances or remain present in the environment for centuries in the case of radioactive materials.

Environmental hazard incidents within Polk County can range from minor petroleum spills to large facility-based incidents that lead to the loss of life, property, environment and economy. Environmental hazard and explosion incidents can contaminate soil and surface water, and groundwater supplies can result in many direct impacts on surrounding ecosystems. Local flora and fauna within hazard areas are also at risk. The application of salt to de-ice roads may impact groundwater and contaminate potable drinking water sources near major highway corridors and state highway routes in Polk County. The environmental impacts of hazardous material releases include:

Hydrologic effects, such as surface and groundwater contamination

- Other effects on water quality such as changes in water temperature
- Damage to streams, lakes ponds, estuaries, and wetland ecosystems
- Air quality effects, such as pollutants, smoke, and dust
- Loss of quality in landscape
- Reduced soil quality
- Damage to plant communities, including loss of biodiversity and damage to vegetation
- Damage or death to animals, through the degradation of habitat, pollution of drinking water, loss of biodiversity or disease

3.3.12.4 PREVIOUS OCCURRENCES

In Iowa, hazardous materials spills are reported to the Department of Natural Resources. According to Iowa Administrative Code Chapter 131, *Notification of Hazardous Conditions*, any person manufacturing, storing, handling, transporting, or disposing of a hazardous substance must notify the Department of Natural Resources and the local police department or the office of the sheriff of the affected county of the occurrence of a hazardous condition as soon as possible but not later than six hours after the onset of the hazardous condition or the discovery of the hazardous condition. The Department of Natural Resources maintains a database of reported spills; according to this database, there have been 1,565 hazardous materials spills reported in Polk County since 1997. The cities of Des Moines, Ankeny, and Saylor Township are the three jurisdictions in Polk County with the most reported

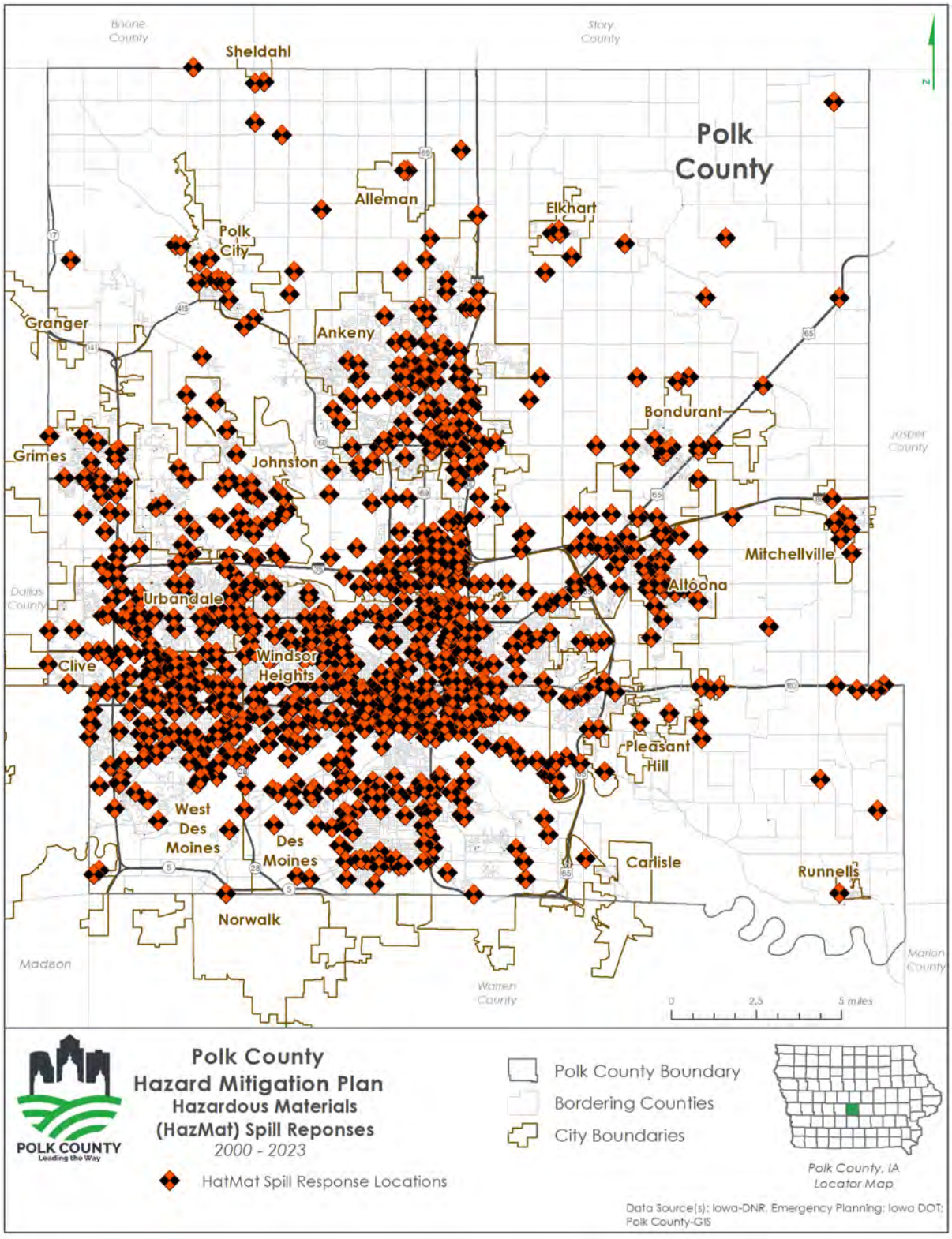
hazardous materials spills. Table 74 lists the number of spills reported in different jurisdictions across Polk County, and Figure 65 maps these spills to provide additional geographic context.

Table 74. Hazardous Materials Spills in Polk County by Jurisdiction

Jurisdiction	Number of Reported Hazardous Materials Incidents
Alleman	4
Altoona	87
Ankeny	154
Bondurant	21
Carlisle	1
Clive	77
Delaware Township	20
Des Moines	608
Elkhart	3
Grimes	29
Johnston	53
Mitchellville	16
Pleasant Hill	45
Polk City	14
Runnells	1
Saylor Township	127
Sheldahl	3
Urbandale	103
West Des Moines	116
Windsor Heights	16
Unincorporated Polk County	67
Total Spills	**1,565**

Source: Iowa Department of Natural Resources

Figure 65. Hazardous Materials Spills in Polk County 2000 - 2023



Another source consulted to report previous Hazardous Materials Incidents is the Environmental Protection Agency's Toxics Release Inventory (TRI). This inventory tracks the management of toxic chemicals that pose a threat to human health and the environment. U.S. facilities in certain industry sectors that manufacture, process, or otherwise use these chemicals in amounts above established levels must report how each chemical is managed through recycling, energy recovery, treatment, and releases to the environment. A "release" of a chemical means that it is emitted to the air or water, or placed in some type of land disposal.

The information submitted by facilities to the EPA and states is compiled annually as the Toxics Release Inventory or TRI, and is stored in a publicly accessible database in Envirofacts. According to the latest available data from TRI, there have been 3,847 uncontrolled releases of hazardous materials in Polk County between 1987 and 2022.

TRI data reflect releases and other waste management activities of chemicals, not whether (or to what degree) the public has been exposed to those chemicals. Release estimates alone are not sufficient to determine exposure or to calculate potential adverse effects on human health and the environment. TRI data, in conjunction with other information, can be used as a starting point in evaluating exposures that may result from releases and other waste management activities which involve toxic chemicals. The determination of potential risk depends upon many factors, including the toxicity of the chemical, the fate of the chemical, and the amount and duration of human or other exposure to the chemical after it is released.

3.3.12.5 PROBABILITY OF FUTURE OCCURRENCE

Based on the annual average of nearly 58 spills per year reported to Iowa DNR since 1997 (1,565 over approximately 27 years), the probability of future occurrence of hazardous materials incidents is assessed to be "Highly Likely."

3.3.12.6 VULNERABILITY

Hazardous Materials incidents can have serious implications for community lifelines. These incidents can occur due to accidents, natural disasters, or, in rare cases, deliberate acts. The impacts of hazardous materials incidents on various community lifelines are shown below.

Table 75. Potential Impacts of Hazardous Materials Incidents on Community Lifelines

Lifelines	Impact Type	Description
Safety & Security		HazMat incidents pose immediate threats to public safety, requiring prompt evacuation and emergency response. Law enforcement and HazMat response teams play a crucial role in

Lifelines	Impact Type	Description
		securing the area, managing the situation, and preventing further harm.
Health & Medical		Exposure to hazardous materials can lead to acute and chronic health issues. Medical facilities need to be prepared to treat victims of such exposure, which may require specialized treatment and decontamination procedures.
Housing & Building Infrastructure		Chemical spills or gas leaks can lead to the contamination of buildings, requiring evacuation and extensive cleanup before they are safe for reoccupation. In severe cases, infrastructure may be permanently damaged.
Economic Stability		The economic impacts include the immediate costs of emergency response, cleanup, and potential fines, as well as longer-term effects on local businesses and industries, especially if the incident leads to a loss of public trust or environmental damage.
Environmental & Ecological Systems		Spills and leaks can have devastating effects on the environment, contaminating soil, water, and air, and harming wildlife. Cleanup and remediation efforts can be extensive and costly.

A) People

People, pets, livestock, and vegetation in close proximity to facilities producing, storing, or transporting hazardous substances are at higher risk. Populations downstream, downwind, and downhill of a released substance are particularly vulnerable. Depending on the characteristics of the substance released, more people, in a larger area may be in danger from explosion, absorption, injection, ingestion, or inhalation. The elderly, children, and the physically and mentally handicapped are most vulnerable because of the lack of mobility to escape the hazard. Additionally, people whose primary language is not English may not understand warnings and evacuation orders given in English.

B) Structures

Hazardous materials incidents can lead to the contamination of buildings, requiring evacuation and extensive cleanup before they are safe for reoccupation. Depending on the agent spilled/leaked, fires and explosions may occur. Explosions can destroy entire buildings, and chemical fires can cause extensive structural damage.

C) Systems

Fires and explosions may occur as a result of hazardous materials incidents, and any nearby infrastructure – utility lines, roads, communications towers, etc. – may be damaged. Additionally, contamination is a concern for water systems. If groundwater is contaminated, wells may pull polluted water into the larger water system. Spills which occur near railways and highways can force authorities to close these routes, and significant events may destroy the routes. Many of the Tier II facilities in Polk County are located along major roadways like Interstate 80 and Interstate 35.

D) Natural, Historic, and Cultural Resources

Hazardous materials incidents can quickly contaminate the natural environment. Hazardous materials can pollute soil, surface water, groundwater, and even the atmosphere. The impact of hazardous materials contaminating the natural environment can last decades, and remedial action is often required to restore the affected area. Flora and fauna which rely on the natural environment can also suffer the consequences of hazardous materials spills, and disruptions to the local ecosystem can have cascading effects. Contaminated water may be unusable for irrigation, which could have dire consequences for local agriculture.

E) Community Activities

Community activities may be disrupted if hazardous materials incidents result in evacuations. Additionally, buildings may be contaminated or destroyed, and this will require cancellation, postponement, or relocation of community activities.

All jurisdictions in the planning area are considered to have some vulnerability ot hazardous materials spills can effect virtually any part of the county. Even locations far from the site of a spill can be impacted if the hazardous materials contaminate the ground or are carried through the air. Most of the hazardous materials incidents are localized and are quickly contained or stabilized. Depending on the characteristic of the hazardous material or the volume of product involved, the affected area can be as small as a room in a building or as large as 5 square miles or more. Many times, additional regions outside the immediately affected area are evacuated for precautionary reasons. More widespread effects occur when the product contaminates the municipal water supply or water system such as river, lake, or aquifer.

Existing Development

The impact of this type of disaster will likely be localized to the immediate area surrounding the incident. The initial concern will be for people, then the environment. If contamination occurs, the spiller is responsible for the cleanup actions and will work closely with responders in the local jurisdiction, the Iowa Department of Natural Resources, and the Environmental Protection Agency to ensure that cleanup is done safely and in accordance with federal and state laws.

As mentioned, it is difficult to determine the potential losses to existing development because of the variable nature of a hazardous materials spill. For example, a spill of a toxic airborne chemical in a populated area could have greater potential for loss of life. By contrast a spill of a very small amount of a chemical in a remote rural area would be much less costly and possibly limited to remediation of soil.

To analyze critical facilities at risk in the planning area, the planning committee compiled an inventory of critical and essential facilities and infrastructure in the planning area. A comparison was made with the locations of Tier II facilities to determine those critical/essential facilities that are within ½ mile and 1 mile of Tier II fixed chemical facilities. There are 157 critical facilities within a ½ mile radius of Tier II facilities and 256 within a 1 mile radius.

Future Development

Continued population growth within many communities in Polk County is likely to increase the overall exposure to this hazard. When feasible, future development should be kept upwind/upstream of fixed facilities which handle large volumes of hazardous materials. Additionally, new industry is encouraged to be mindful of their surroundings and avoid placing hazardous materials unnecessarily close to existing development and natural assets such as lakes and rivers. Industry leaders are also encouraged to work local law enforcement and emergency services to ensure that authorities have a proper understanding of the volume and characteristics of hazardous materials present.

Climate Change

Climate change is unlikely to have a noticeable impact on the frequency and severity of hazardous materials incidents in Polk County. Transportation, manufacturing, and storage of hazardous materials is anticipated to continue independent of changing weather conditions.

Hazard Risk Score

Table 76. Hazardous Materials Incident Probability and Health Impact Ratings

Health Severity	Community Impact	Public Health System Impact	Healthcare System Impact	Total Health Hazard Score	Probability
2	1	3	2	8	Highly Likely

3.3.13 HUMAN DISEASE

3.3.13.1 DESCRIPTION

A human disease outbreak is a medical, health or sanitation threat to the general public (such as contamination, epidemic, plague and insect infestation). The outbreak may be spread by direct contact with an infected person or animal, ingesting contaminated food or water, vectors such as mosquitoes or ticks, contact with contaminated surroundings such as animal droppings, infected droplets, or by aerosolization.

Iowa's public health and health care communities work to protect Iowans from infectious diseases and preserve the health and safety of Iowans by rapidly identifying and containing a wide range of biological agents. Local public health departments and the Iowa Department of Public Health, Center for Acute Epidemiology investigate disease "outbreaks" of routine illnesses. There are a number of biological diseases/agents that are of concern to the state of Iowa such as vaccine preventable disease, foodborne disease and community associated infections having significant impact on the morbidity of Iowans. The following descriptions are general and it should be noted that individuals may experience more or less severe consequences.

Vaccine Preventable Disease

In the U.S., there are common infectious diseases that include polio, measles, diphtheria, pertussis, rubella, mumps, tetanus and *Haemophilus influenzae* type b that are now rare because of widespread use of vaccines. Routine childhood immunizations have helped protect both individuals and communities each year saving nearly $14 billion in direct medical costs and

$69 billion in costs to society according to the U.S. Department of Health and Human Services, Centers for Disease Control and Prevention. Vaccine preventable diseases continue to threaten the health of Iowans when children, adolescents and adults are un-immunized or under-immunized.

Influenza

Influenza (flu) is a viral infection of the nose, throat, bronchial tubes, and lungs. There are two main types of virus: A and B. Each type includes many different strains, which tend to change each year. In Iowa, influenza occurs most often in the winter months. Illnesses resembling influenza may occur in the summer months, but these are usually the result of other viruses that exhibit symptoms commonly referred to as influenza-like illness or ILI.

Influenza is highly contagious and is easily transmitted through contact with droplets from the nose and throat of an infected person during coughing and sneezing. Typical symptoms include headache, fever, chills, cough, and body aches. Although most people are ill for only a few days some may have secondary infections, such as pneumonia, and may need to be hospitalized.

Anyone can get influenza, but it is typically more serious in the elderly and people with chronic illnesses such as cancer, emphysema, or diabetes or weak immune systems. It is estimated that thousands of people die each year in the United States from flu or related complications.

In 2012, influenza and pneumonia combined was the 8th leading causes of death in Iowa with 657 deaths.

Pandemic Influenza

A pandemic is a global disease outbreak. A pandemic flu is a human flu that causes a global outbreak, or pandemic, of serious illness. A flu pandemic occurs when a new influenza virus emerges for which people have little or no immunity, and for which there is no vaccine.

This disease spreads easily person-to-person, causing serious illness, and can sweep across the country and around the world in a very short time. The Centers for Disease Control and Prevention (CDC) has been working closely with other countries and the World Health Organization to strengthen systems to detect outbreaks of influenza that might cause a pandemic and to assist with pandemic planning and preparation.

During 2009 and 2010 health professionals around the globe worked to combat the H1N1 influenza virus. This relatively mild and stable influenza virus circulated across the globe and caused one of the most robust worldwide vaccination campaigns since the 1970s. Health professionals continue to monitor the possibility of an avian (bird) flu pandemic associated with a highly pathogenic avian H5N1 virus. Since 2003, avian influenza has been spreading through Asia. A growing number of human H5N1 cases contracted directly from handling infected poultry have been reported in Asia, Europe, and Africa, and more than half the infected people have died. There has been no sustained human-to-human transmission of the disease, but the concern is that H5N1 will evolve into a virus capable of human-to-human transmission.

An especially severe influenza pandemic could lead to high levels of illness, death, social disruption, and economic loss. Impacts could range from school and business closings to the interruption of basic services such as public transportation, health care, and the delivery of food and essential medicines.

COVID-19

In December 2019 the SARS-CoV-2 virus (COVID-19) was identified in China. The disease rapidly began to spread around the globe, and the first case in the U.S. was confirmed on January 21, 2020. The first case of COVID-19 within the State of Iowa was confirmed on March 8, 2020. The disease would go on to be one of the most significant events in recent history, and day-to-day disprutions would rival those of the terrorist attacks on September 11, 2001. Millions of people were hospitalized, schools and workplaces would shift to remote work (work from home), and economies grappled with loss of revenues as many businesses had to reduce or temporarily cease operations due to regulations intended to reduce the spread of COVID-19. As of 2024, the planning area has largely

returned to normal, although impacts of the pandemic can still be found. According to aggregate data from the CDC and state and local health agencies, COVID-19 has resulted in 145,914 hospitalizations and 1,201 deaths in Polk County through March 13, 2024.

3.3.13.2 LOCATION

Due to the contagious nature and ubiquity of disease, residents in all jurisdictions within the planning area are equally vulnerable.

3.3.13.3 EXTENT

The hazard of human disease comprises a wide variety of illnesses with diverse potential impacts. Human disease can be small outbreaks of minor contagious illnesses such as the common cold, or widespread pandemics leading to mass fatalities.

3.3.13.4 PREVIOUS OCCURRENCES

There have been five acknowledged pandemics in the past century:

- **2020 COVID-19 Pandemic –** The COVID-19 pandemic began in late 2019 and spread around the world in 2020. The virus resulted in roughly 7 million deaths worldwide, with approximately 1.2 million deaths in the U.S.
- **2009 H1N1 Influenza**—The 2009 H1N1 Pandemic Influenza caused 659 hospitalizations with lab confirmed H1N1 since 9/1/09 and resulting in 41 fatalities. Typically, people who became ill were the elderly, the very young and people with chronic medical conditions and high risk behaviors.
- **1968–69 Hong Kong flu (H3N2)** —This strain caused approximately 34,000 deaths in the United States and more than 700,000 deaths worldwide. It was first detected in Hong Kong in early 1968 and spread to the United States later that year. Those over age 65 were most likely to suffer fatal consequences. This virus returned in 1970 and 1972 and still circulates today.
- **1957–58 Asian flu (H2N2)** —This virus was quickly identified because of advances in technology, and a vaccine was produced. Infection rates were highest among school children, young adults, and pregnant women. The elderly had the highest rates of death. A second wave developed in 1958. In total, there were about 70,000 deaths in the United States. Worldwide deaths were estimated between one and two million.
- **1918–19 Spanish flu (H1N1)** —This flu is estimated to have sickened 20-40 percent of the world's population. Over 20 million people lost their lives. Between September 1918 and April 1919, 500,000 Americans died. The flu spread rapidly; many died within a few days of infection, others from secondary complications. The attack rate and mortality were highest among adults 20-50 years old; the reasons for this are uncertain.

3.3.13.5 PROBABILITY OF FUTURE OCCURRENCE

There are many endemic diseases that have the potential to create pandemics. Because these diseases have not yet been eradicated, future occurrence of human disease is virtually guanteed. Periods of high spread and occurrence of the flu and common cold are expected on an annual basis. Due to the ubiquity of disease among humans, the possibility of human disease in any given year is "very likely" as defined in the methodology section.

3.3.13.6 VULNERABILITY

Most disease outbreaks that cause critical numbers of deaths are communicable in nature, meaning that they are spread from person to person. The key to reducing the critical nature of the event is to stop the spread of disease. This is generally done in three ways: (1) identification and isolation of the ill, (2) quarantine of those exposed to the illness to prevent further spread, and (3) education of the public about methods to prevent transmission. The public health and health care providers in Polk County routinely utilize all three methods to reduce morbidity and mortality from infectious disease.

The CDC estimates 76 million people suffer foodborne illnesses each year in the United States, accounting for 325,000 hospitalizations and more than 5,000 deaths. Foodborne disease is extremely costly. Health experts estimate that the yearly cost of all foodborne diseases in this country is $5 to $6 billion in direct medical expenses and lost productivity. Infections with the bacteria *Salmonella* alone account for $1 billion yearly in direct and indirect medical costs.

The ease and speed with which human disease can spread means that all communities in Polk County are equally vulnerable to this hazard. The potential impacts of this hazard on different community lifelines are shown below.

Table 77. Potential Impacts of Human Disease on Community Lifelines

Lifelines	Impact Type	Description
Health & Medical		The most direct impact of a pandemic is on health services. Hospitals and healthcare facilities can become overwhelmed with patients, leading to a strain on resources, personnel, and infrastructure. The need for medical supplies, ventilators, and personal protective equipment can surge beyond normal levels.

Lifelines	Impact Type	Description
Food, Water, & Shelter		Supply chains for essential goods, including food and water, can be disrupted due to illness-related workforce shortages or quarantine measures. Ensuring access to these basic necessities becomes a critical challenge, particularly for vulnerable populations.
Transportation		Pandemics can lead to reduced transportation services due to decreased demand, illness among transportation workers, or quarantine measures. This can affect the movement of goods and people, including the delivery of essential supplies and access to healthcare.
Communications		Reliable communication is crucial for disseminating public health information, guidelines, and updates during a pandemic. The increased demand for internet and telecommunication services can strain existing communication networks, especially with more people working from home.
Energy		While energy infrastructure may be less directly impacted, workforce shortages due to illness can affect the maintenance and operation of power plants and the energy grid.
Safety & Security		The need for public safety and security services can increase, as pandemics can lead to heightened public anxiety, the enforcement of quarantine measures, and the potential for civil unrest.

Lifelines	Impact Type	Description
Economic Stability		Pandemics can have a profound impact on the economy, affecting businesses, employment rates, and financial stability. Sectors such as tourism, hospitality, and retail can be particularly hard hit.

A) People

Although infectious diseases do not respect geographic boundaries, several populations in Polk County are at increased risk to infectious diseases. Communicable diseases are most likely to spread quickly in institutional settings such as prisons, dormitories, long-term care facilities, day care facilities, and schools. Many diseases can be controlled through the widespread utilization of vaccines. Pandemics are generally thought to be the result of novel strains of viruses. Because of the process utilized to prepare vaccines, it is impossible to have vaccine pre-prepared to combat pandemics. A portion of the human and financial cost of a pandemic is related to lag time to prepare a vaccine to prevent future spread of the novel virus. In some cases, current vaccines may have limited activity against novel strains. According to data from the Centers for Disease Control and Prevention (CDC), 70% of Polk County residents and 95% of Polk County residents aged 65 or older were vaccinated against COVID-19. This indicates a moderate level of participation in vaccine programs reducing Polk County's disease risk.

B) Structures

Buildings, infrastructure, and critical facilities are not vulnerable to this hazard. It affects only persons susceptible to the illness. The impacts and potential losses are largely economic and are dependent on the type, extent and duration of the illness.

C) Systems

Transportation, electricity, internet, and most other services are unlikely to be disrupted by human diseases. Water systems may need to be monitored for possible waterborne diseases which could be spread to the community.

D) Natural, Historic, and Cultural Resources

Human diseases are unlikely to have any noticeable impact on natural, historic, and cultural resources in the planning area.

E) Community Activities

Human disease can cause considerable disruption to normal community activities. Recent events have necessitated new strategies such as remote work and virtual conferences to enable continuation of critical services. Schools, courtrooms, and many other sites altered the way they function throughout the COVID-19 pandemic.

Existing Development

While human diseases do not cause phyiscal harm to existing development, such events may cause a shift in what is considered desireable. As an example, large, open office spaces may become less appealing for companies that have a significant number of employees which work from home. Furthermore, older structures may have fewer outlets and outdated internet connections, and this may make it harder for these structures to compete with newer development on the market.

Future Development

Future development is unlikely to have a major impact on occurrences of human disease, but new development may incorporate some of the lessons learned through the COVID-19 pandemic. Examples of this include apartment buildings offering amenities to make remote work more feasible, companies needing smaller volumes of office space, and better heating, ventilation, and air conditioning systems which filter out airborne pathogens. Addiitonally, healthcare systems must adapt or expand in order to continue provide adequate healthcare for an increasing population.

Climate Change

At present there is a scarcity of evidence directly linking climate change to increased occurrences and severity of human diseases. However, the impacts of climate change may have indirect consequences on human diseases; changing conditions may lead to human migration, and this may bring previously distant populations closer to one another. Additionally, animals may also move close to human populations as changing weather patterns – coupled with human activities such as deforestation – erode the viability of existing habitats.

Hazard Risk Score

Table 78. Human Disease Probability and Health Impact Ratings

Health Severity	Community Impact	Public Health System Impact	Healthcare System Impact	Total Health Hazard Score	Probability
3	3	4	3	13	Highly Likely

3.3.14 INFRASTRUCTURE FAILURE

3.3.14.1 DESCRIPTION

Critical infrastructure involves several different types of facilities and systems including: communications, energy (electricity and natural gas), other utilities such as water and sewer systems, and transportation facilities such as roads and bridges. Failure of these utilities or other components of the infrastructure in the planning area can seriously impact public health, functioning of communities and the economy. Disruption of any of these services could result from the majority of the natural, technological, and manmade hazards described in this plan. In addition to a secondary or cascading impact from another primary hazard, utilities and infrastructure can fail as a result of faulty equipment, lack of maintenance, degradation over time, or accidental damage such as damage to buried lines or pipes during excavation.

It is worth noting that, according to FEMA Hazard Mitigation Assistance (HMA) guidance, mitigation projects for mitigating infrastructure failure as a standalone hazard are not eligible for FEMA HMA grant funding. We are concerned about mitigation efforts for this hazard, but more in-depth analyses of this hazard (in relation to mitigation) is handled by other agencies such as the Iowa Utilities Board and Public Works departments.

Communications Failure

Communications failure is the widespread breakdown or disruption of normal communication capabilities. This could include major telephone outages, internet interruption, loss of cellular telephone service, loss of local government radio facilities, long-term interruption of electronic broadcast services, or emergency 911. Law enforcement, fire, emergency medical services, public works, and emergency warning systems are just a few of the vital services which rely on communications systems to effectively protect citizens. In addition, business and industry rely heavily on various modes of communication. Mechanical failure, traffic accidents, power failure, line severance, and weather can all affect communications systems and disrupt service. Disruptions and failures can range from localized and temporary to widespread and long-term.

The types of hazards and impacts to internet and telecommunications infrastructure are very similar to electric power supply. Land line phone lines often utilize the same poles as electric lines. So, when weather events such as windstorm or winter weather cause lines to break, both electricity and telephone services experience outages. With the increasing utilization of cellular phones, hazard events such as tornado that can damage cellular repeaters can cause outages. In addition, during any hazard event, internet and telecommunications systems can become overwhelmed due to the surge in call/usage volume.

Energy Failure

Energy failure includes interruption of service to electric, petroleum, or natural gas. Disruption of electric power supply can be a cascading impact of several other hazards. Electric power is the type of energy failure that is most often a secondary impact of other hazard events. The most common hazards analyzed in this plan that disrupt power supply are: flood, tornado, windstorm, and winter weather as these hazards can cause major damage to power infrastructure. To a lesser extent, extreme temperatures, dam and levee failure, lightning, and terrorism can disrupt power. Extreme heat can disrupt power supply when air conditioning use spikes during heat waves which can cause brownouts. Dam and levee failure, are similar to flood in that infrastructure can be damaged or made inaccessible by water. Lightning strikes can damage substations and transformers, but is usually isolated to small areas of outage. Many forms of terrorism could impact power supply either by direct damage to infrastructure or through cyber-terrorism targeting power supply networks.

Electricity in Polk County is provided by: MidAmerican Energy, Interstate Power and Light Company, Midland Power Rural Electric Cooperative, Consumer's Energy Rural Electric Cooperative, and Carlisle Municipal Energy. Natural gas providers in Polk County include MidAmerican Energy, Consumers Energy, Black Hills Energy, and Alliant/Interstate Power and Light.

Primary hazards that can impact natural gas and oil pipelines are earthquake, expansive soils, land subsidence, landslide, and terrorism. Interstate pipelines connect the local distribution system to the gas suppliers and to natural gas hubs. Polk County has two pipeline connections to the Northern Natural Gas Company transportation system (now owned by MidAmerican Energy). The primary connection is to the City of Boone, where several pipeline branches converge. MidAmerican recently built a second smaller natural gas pipeline connecting the County to pipeline systems in the southern part of the State.

Other Utility Failure

Interruption of other utilities such as water and sewer systems can be a devastating, costly impact. The primary hazards that can impact water supply systems are: drought, flood, hazardous materials, and terrorism. (Note: Terrorism is not profiled in this plan). Winter storm can also impact water supply if low temperatures cause failure/breakage of water infrastructure. The primary hazard that impacts wastewater/sewer systems is flood (flash and fluvial).

Transportation Infrastructure Failure

Failure of transportation infrastructure is a growing concern across the U.S. In 2022, concerns about deteriorating transportation infrastructure and increasing fatalities led the U.S. Secretary of Transportation to state that the U.S. faces a "crisis on our roadways." While some level of road maintenance is to be expected – repairing potholes is a seasonal activity – there is unease about the state of large structures like bridges, as well as the broader transportation network. Each year, the American Society of Civil Engineers (ASCE) produces infrastructure report cards for U.S. states. The 2023 report card gave Iowa a D+ grade for overall bridge infrastructure. According to the report, one in every five bridges in Iowa is rated poor, giving the state the worst ranking in the nation by number of poor bridges, and seventh worst by poor bridge deck area. Reducing the number of poor bridges is an

Iowa DOT priority, and over the last four years the department achieved a 26% reduction in state-owned poor bridges. However, all but 30 of Iowa's 4,599 poor bridges are owned by cities and counties. Bridges which are no longer in adequate condition are understandably more vulnerable to various hazards including but not limited to, tornadoes, windstorms, and flooding.

3.3.14.2 LOCATION

The entire planning area is at risk to all types of infrastructure failure included in the hazard description section, either from primary failure due to malfunction, degradation, or accidental or intentional damage or as a result of a secondary impact related to another hazard event. Additional information is provided for specific types of infrastructure based on available data.

Polk County is well served for internet access and broadband services. Des Moines is the center of Iowa's statewide fiber optic network, installed by the state of Iowa in the early 1990s, which is now administered by the Iowa Communications Network.

Table 79 provides the names of electric, natural gas, and landline telephone service providers for each jurisdiction in Polk County. The electrical service area map for Polk County is shown in Figure 66.

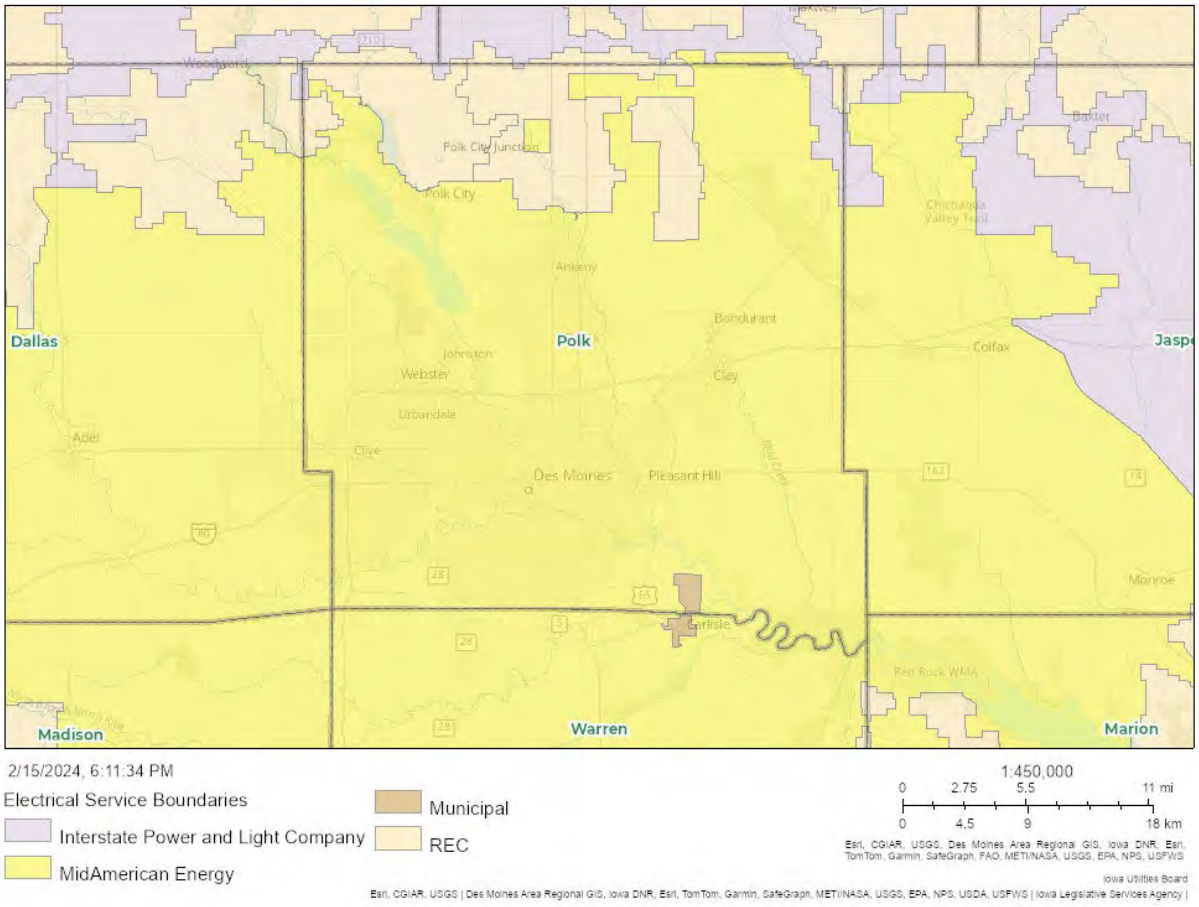
Table 79. Electric, Natural Gas, and Landline Telephone Service Providers in Polk County

Jurisdiction	Electric Service Providers	Gas Service Providers	Landline Telephone Service Providers
Unincorporated County	MidAmerican Energy Midland Power Consumers Energy	MidAmerican Energy	Windstream Communications
City of Alleman	MidAmerican Energy Consumers Energy	MidAmerican Energy	Windstream Communications
City of Altoona	MidAmerican Energy	MidAmerican Energy	CenturyLink McLeodUSA
City of Ankeny	MidAmerican Energy Consumers Energy	MidAmerican Energy Consumers Energy	CenturyLink McLeodUSA
City of Bondurant	MidAmerican Energy	MidAmerican Energy	CenturyLink McLeodUSA
City of Carlisle	Carlisle Municipal MidAmerican Energy	MidAmerican Energy	CenturyLink McLeodUSA
City of Clive	MidAmerican Energy	MidAmerican Energy	CenturyLink McLeodUSA
City of Des Moines	MidAmerican Energy	MidAmerican Energy	CenturyLink McLeodUSA
City of Elkhart	MidAmerican Energy	MidAmerican Energy	Windstream Communications
City of Granger	MidAmerican Energy	Black Hills Energy	CenturyLink McLeodUSA
City of Grimes	MidAmerican Energy	Black Hills Energy	CenturyLink McLeodUSA
City of Johnston	MidAmerican Energy	MidAmerican Energy	CenturyLink McLeodUSA
City of Mitchellville	MidAmerican Energy	MidAmerican Energy	CenturyLink
City of Norwalk	MidAmerican Energy	MidAmerican Energy	CenturyLink McLeodUSA

City of Pleasant Hill	MidAmerican Energy	MidAmerican Energy	CenturyLink McLeodUSA
City of Polk City	MidAmerican Energy	MidAmerican Energy	CenturyLink McLeodUSA
City of Runnells	MidAmerican Energy	Not Reported	CenturyLink McLeodUSA
City of Sheldahl	Alliant/Interstate Power and Light	Alliant/Interstate Power and Light	Windstream Communications
City of Urbandale	MidAmerican Energy	MidAmerican Energy	CenturyLink McLeodUSA
City of West Des Moines	MidAmerican Energy	MidAmerican Energy	CenturyLink McLeodUSA
City of Windsor Heights	MidAmerican Energy	MidAmerican Energy	CenturyLink McLeodUSA

Source: Iowa Utilities Board

Figure 66. Electrical Service Area Boundaries Polk County



There are relatively few private wells supplying potable water within Polk County, although the planning team acknowledges that there are a number of unknown abandoned or disused wells that might have an impact on surface water, and may or may not have been properly abandoned. Instead, most water is provided by public water suppliers, both municipal and private. The Des Moines Water Works is the largest public water supplier, serving residential and commercial customers within an approximately 50-mile radius around the City of Des Moines. Water comes directly from the Des

Moines and Raccoon Rivers and from an infiltration gallery or radial collector wells in the sands and gravels along the Raccoon River. Water is treated prior to distribution at the Fleur Drive treatment plant in the City of Des Moines and a new facility at Maffitt Reservoir southwest of the Des Moines metro area. Des Moines Water Works sells water to many smaller public water suppliers and other entities in Central Iowa. Des Moines Water Works sells water to the cities of Ankeny, Bondurant, Clive, Johnston, Pleasant Hill, Polk City and West Des Moines, to the local water systems in Berwick and Saylorville, and to the Southeast Polk and Xenia Rural Water Districts. These purchasers of water generally maintain their own distribution systems, billing, and other services.

While the water supply comes from Des Moines Water Works, rural water systems located in the unincorporated areas operate the distribution networks. Most of the southeast portion of the county is served the Southeast Polk Rural Water District, the northwestern portion by the Xenia Rural Water District, and the northeastern corner by the Central Iowa Water Association. Water treatment and other similar facilities are included in the critical facilities list used in analyses throughout this plan.

According to the Iowa Department of Transportation, there are 543 bridge structures in Polk County. The average daily traffic among all 543 bridges in Polk County is 6,553,541, which is an average of 12,069 per bridge. Of these 543 bridges, 321 are considered to be in “good” condition, 192 in “fair” condition, and 32 are considered “structurally deficient”. Table 80 shows the available data for structurally deficient and fair condition bridges among different Polk County jurisdictions. None of the bridges along the Interstate network in Polk County (I-80, I-35, I-235) are considered structurally deficient.

Table 80. Fair and Structurally Deficient Bridges in Polk County by Jurisdiction

Jurisdiction	Number of “Fair” Condition Bridges	Number of “Structurally Deficient” Bridges
Alleman	1	0
Altoona	0	0
Ankeny	4	0
Bondurant	2	1
Clive	5	0
Deleware Township	N/A	N/A
Des Moines	28	2
Elkhart	N/A	N/A
Grimes	1	0
Johnston	0	0
Mitchellville	N/A	N/A
Pleasant Hill	3	1
Polk City	N/A	N/A
Saylor Township	N/A	N/A

Urbandale	12	0
West Des Moines	28	2
Windsor Heights	3	0
Remainder of Polk County*	103	26
Polk County Total	**190**	**32**
*Includes bridges in unincorporated Polk County as well as communities like Elkhart, Sheldahl, and others in Polk County for which the Iowa DOT database did not provide city-specific bridge numbers.		

3.3.14.3 EXTENT

Utility interruptions most commonly affect lighting, heating, air conditioning, communications, ventilation/circulation, household appliances, and office equipment. The impacts of utility outages can be exacerbated by the presence of other hazards; unpowered sump pumps will be unable to mitigate basement flooding, and unpowered homes can quickly become too hot or too cold if the planning area is experiencing extreme temperatures. Extreme temperatures – both hot and cold – can impact the health and safety of vulnerable populations like children, the elderly, disabled individuals, people who lack access to transportation, and others. More severe interruptions can impact fire, medical, and security systems, although these systems often have a back-up power source. The impacts of interruptions can also be dire for people who are dependent on electronic medical equipment. Utility interruptions can significantly hamper first responders in their efforts to provide aid during or following a disaster, especially with the loss of telecommunications and wireless capabilities. Additionally, internet outages could significantly disrupt the economy, especially as recent industry changes have led to significant increases in employees working from home.

Failure of transporation infrastructure typically occur when conditions exceed what a structure was designed to withstand. Failures can also occur when defects in the design, engineering, construction, or material strength go unnoticed and result in a bridge which is weaker than expected. In severe cases, transpoortation infrastructure failures can be major events. First, bridge failures can be mass casualty incidents. Second, the loss of a bridge with a high daily traffic count can significantly disrupt travel within and through Polk County. Third, a bridge collapse can have negative health impacts for the surrounding community – leaking fuel and motor oil, as well as hazardous materials leaking from ruptured containers, may contaminate the surrounding land and waterways. Lastly, the removal of debris and the design and construction of a new bridge can be costly and time consuming endevours.

3.3.14.4 PREVIOUS OCCURRENCES

As prevously mentioned, infrastructure failure often occurs as a secondary impact to other hazard events. For specific descriptions, please see the “previous occurrences” section of the other hazards included in this plan.

3.3.14.5 PROBABILITY OF FUTURE OCCURRENCES

Infrastructure failure does occur on a routine basis, although events that are life threatening, damaging, or otherwise adversely impact the economy are less common. Overall, the probability of infrastructure failure within the planning area is considered “highly likely.”

3.3.14.6 VULNERABILITY

While every community in the planning area is at risk to some type of utility/infrastructure failure, the vulnerability is somewhat elevated in the more urbanized areas of the county due to the higher population density, development, and economic activities is those areas. Agricultural areas of the planning area are also vulnerable to prolonged outage events as modern agricultural practices are reliant on energy; such as electric milking machines, and irrigation pivots.

In addition, the smaller utility suppliers such as small electrical suppliers gennerally have limited resources for mitigation. This could mean greater vulnerability in the event of a major, widespread disaster, such as a major flood, severe winter storm or ice storm. The majority of the municipal utilities purchase power on the wholesale market for resale to their customers. This may make them more vulnerable to regional shortages of power as well.

The specific impacts of infrastructure failure can vary depending on what component fails – these impacts are described in the following table. Since all communities in Polk County broadly rely upon electric, water, transportation, and other infrastructure, they are considered to be equally vulnerable this hazard.

Table 81. Potential Impacts of Infrastructure Failure on Community Lifelines

Lifelines	Impact Type	Description
Safety & Security		Utility disruptions can compromise safety systems, street lighting, and security alarms, increasing risks for accidents and crime. Emergency services must adapt to these challenges, ensuring public safety in the absence of regular utilities.
Health & Medical		Hospitals and healthcare facilities rely heavily on utilities. Power outages can affect medical equipment, refrigeration of medicines, and comfort of patients. Backup systems are crucial for maintaining healthcare operations during interruptions.

Lifelines	Impact Type	Description
Housing & Building Infrastructure		Residential and commercial buildings depend on utilities for lighting, heating, cooling, and running essential appliances. Extended interruptions can make buildings uninhabitable, leading to displacement.
Utilities		The interruption itself directly impacts this lifeline. Restoring these services swiftly is critical for the functioning of all other community aspects.
Transportation Services		Traffic control systems, public transit, and fuel stations rely on utilities. Disruptions can lead to traffic congestions, accidents, and hinder the mobility of residents and emergency responders.
Economic Stability		Utility interruptions can halt business operations, affect commerce, and lead to significant economic losses. Industries that depend on consistent power and water supply are particularly vulnerable.

A) People

Utility failures are usually short-lived and not a major conern for most individuals. However, short utility failures can be problematic for individuals who rely upon these services, such as those with medical conditions, and prolonged utility failures can have severe consequences. In particular, power outages which prevent the use of air conditioning in the summer or heating in the winter can leave individuals exposed to dangerous temperatures. Extreme temperatures are especially concerning for the elderly and young children. Individuals with disabilities or without access to a vehicle are also at an elevated risk due to the added challenges they face when seeking relief from the heat/cold.

B) Structures

Infrastructure failures can involve important transportation structures like tunnels and bridges. There is a limited inventory of tunnels (not including underpasses) in the planning area, but there are over 540 bridges in Polk County. Utility failures generally do not have a significant impact on structures. However, it is conceivable that the secondary impacts of utility failure – such as fires resulting from a ruptured gas pipeline – can pose a risk to structures in the planning area.

C) Systems

Infrastructure failures will inherently involve the systems which communities typically rely upon, and significant failures can disrupt or even entirely halt the use of these systems. In some instances, failures of one system can impact others; for example, the loss of electricity may also lead to the loss of internet connectivity. The greatest concern is a cascading event which renders multiple systems unreliable or unusable.

D) Natural, Historic, and Cultural Resources

Utility failures generally have a limited impact on natural, historic, and cultural resources in the planning area. The secondary impacts of utility failure, such as fires resulting from ruptured gas pipelines and contamination from wastewater, may pose a greater risk to these resources than the actual utility failure.

E) Community Activities

Community activities may need to be rescheduled, postponed, or cancelled if the locations where these activities take place are impacted by infrastructure failure. However, the extent of the transportation network in Polk County makes it unlikely that the failure of a bridge or road will render an area completely inaccessible. Utility failures like power and internet outages may disrupt community activities so long as they persist, while utility failures involving water, wastewater, and natural gas may have consequences that extend beyond the outage period.

Existing Development

Since infrastructure failure is generally a secondary or cascading impact of other hazards, it is not possible to quantify estimated potential losses specific to this hazard due to the variables associated with affected population, duration of outages, etc.

Although the variables make it difficult to estimate specific future losses, FEMA has developed standard loss of use estimates in conjunction with their Benefit-Cost Analysis methodologies to estimate the cost of lost utilities on a per-person, per-use basis (See Table 82).

Table 82. FEMA Standard Values for Loss of Service for Utilities and Roads/Bridges

Loss of Electric Power	Cost of Complete Loss of Service
Total Economic Impact	$126 per person per day
Loss of Potable Water Service	Cost of Complete Loss of Service
Total Economic Impact	$93 per person per day
Loss of Wastewater Service	Cost of Complete Loss of Service
Total Economic Impact	$41 per person per day
Loss of Road/Bridge Service	Cost of Complete Loss of Service
Vehicle Delay Detour Time	$38.15 per vehicle per hour
Vehicle Delay Mileage	$0.55 per mile (or current federal mileage rate)

Source: FEMA BCA Reference Guide, June 2009, Appendix C

Future Development

Increases in development and population growth increase the demand for utilities and use of infrastructure as well as the level of impacts when the utilities or infrastructure fail. To better accommodate increased utility demand, improvements to utility infrastructure are likely to become more urgent as population increases.

Climate Change

Climate change has the potential to impact the probability of infrastructure failure in several ways. First, changing weather patterns may increase both the frequency and severity of hazards like extreme temperatures, winter storms, tornadoes, and other natural hazards which can directly damage infrastructure. See the other hazard sections for additional information on this. Climate change may also jeopardize the availability of water, electricity, and natural gas due to increased demand. Climate change may also make it more difficult to produce electricity through renewable resources like solar and wind power by increasing the frequency of cloudy days and making wind patterns less predictable.

Hazard Risk Score

Table 83. Infrastructure Failure Probability and Health Impact Ratings

Health Severity	Community Impact	Public Health System Impact	Healthcare System Impact	Total Health Hazard Score	Probability
4	3	2	4	13	Highly Likely

3.3.15 LEVEE FAILURE

3.3.15.1 DESCRIPTION

Levees are earth embankments constructed along rivers and coastlines to protect adjacent lands from flooding. Floodwalls are concrete structures, often components of levee systems, designed for urban areas where there is insufficient room for earthen levees. When levees and floodwalls and their appurtenant structures are stressed beyond their capabilities to withstand floods, levee failure can result in loss of life and injuries as well as damages to property, the environment, and the economy.

Levees range from small agricultural levees that protect farmland from high-frequency flooding to large urban areas that protect people and property from larger-less frequent flooding events such as the 100-year and 500-year flood levels. For purposes of this discussion, levee failure will refer to both overtopping and breach of a levee as defined in FEMA's Publication "So You Live Behind a Levee" (https://www.spl.usace.army.mil/Portals/17/SoYouLiveBehindLevee.pdf).

Overtopping occurs when floodwaters exceed the height of a levee and flow over its crown. As the water passes over the top, it may erode the levee, worsening the flooding and potentially causing an opening, or breach, in the levee.

A levee breach occurs when part of a levee gives way, creating an opening through which floodwaters may pass. A breach may occur gradually or suddenly. The most dangerous breaches happen quickly during periods of high water. The resulting torrent can quickly swamp a large area behind the failed levee with little or no warning.

Earthen levees can be damaged in several ways. For instance, strong river currents and waves can erode the surface. Debris and ice carried by floodwaters—and even large objects such as boats or barges—can collide with and gouge the levee. Trees growing on a levee can blow over, leaving a hole where the root wad and soil used to be. Burrowing animals can create holes that enable water to pass through a levee. If severe enough, any of these situations can lead to a zone of weakness that could cause a levee breach. In seismically active areas, earthquakes and ground shaking can cause a loss of soil strength, weakening a levee and possibly resulting in failure. Seismic activity can also cause levees to slide or slump, both of which can lead to failure.

3.3.15.2 LOCATION

There are likely agricultural levees and other non-regulated levees within the planning area that are not inventoried or inspected. These levees that are not designed to provide protection from the 1% annual chance flood would overtop or fail in the 1% annual chance flood scenario. These levees are also not reflected in the U.S. Army Corp of Engineer's National Levee Database. For the purposes of this levee failure profile and risk assessment, the levees identified in the National Levee Database will be discussed and further analyzed. According to the database there are 11 levees in Polk County. The specific jurisdictions in which these levees are located, in whole or in part, are Carlisle, Des Moines, Pleasant Hill, and West Des Moines, as well as unincoporated sections of Polk County. Table 84 provides additional information about these levees.

Table 84. Levees in Polk County

System Name	Flooding Source(s)	Levee Length (miles)	People Behind Levee	Buildings Behind Levee	Critical Facilities Behind Levee	Property Value Behind Levee
Avon Station, IA – Lake Red Rock Remedial Works	Des Moines River	2.06	309	129	0	$31,111,440
Des Moines Water Works Levee	Raccoon River	0.75	0	11	1	$47,879,381

Des Moines, IA – Birdland Park	Des Moines River	1.37	2,283	183	1	$175,321,737
Des Moines, IA – Central Place	Des Moines River	1.10	1,168	149	5	$227,487,670
Des Moines, IA – DM-I & SEDM – Pleasant Hill – Lake Red Rock Remedial Works	Des Moines River	9.70	7,938	869	16	$1,874,429,192
Des Moines, IA – DM-II	Des Moines River, Raccoon River	2.38	44,753	323	25	$2,678,496,260
Des Moines, IA – DM-III	Des Moines River, Raccoon River	2.01	1,993	860	4	$183,384,360
Des Moines, IA – RR-I	Raccoon River	1.26	1,686	65	0	$159,644,010
Polk County Drainage District No. 9	Des Moines River	3.22	8	45	0	$26,762,748
WDM-I	North Raccoon River	0.79	21	30	0	$22,996,736

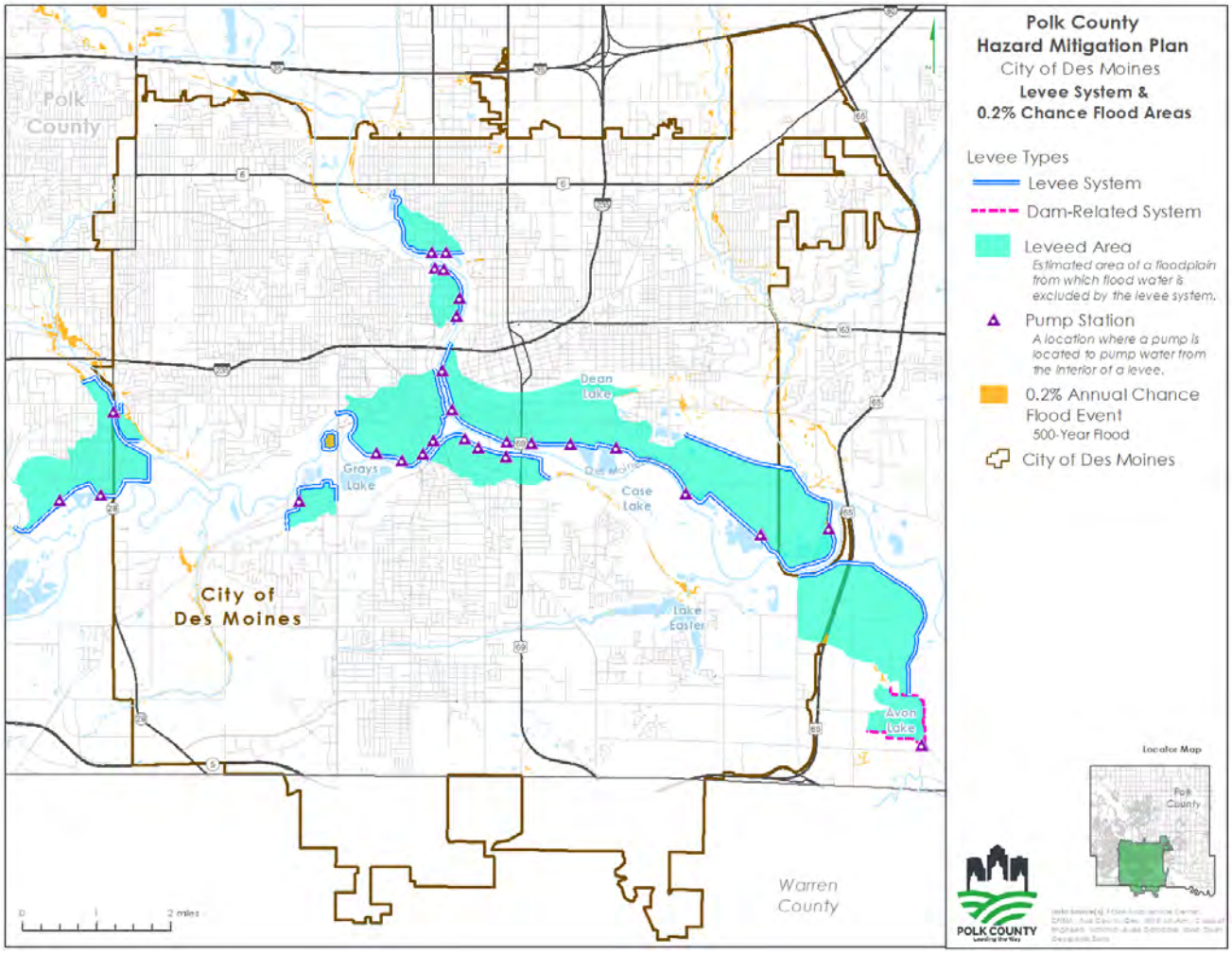
West Des Moines, IA and Des Moines, IA LFP	Raccoon River, Walnut River	3.71	3,053	1,360	4	$550,059,200

Note: Data on the number of people, buildings, critical facilities, and property value comes from the U.S. Army Corps of Engineers' National Inventory of Levees.

City of Des Moines

According to the National Inventory of Levees database, there are nine different levee systems which protect the City of Des Moines from flooding events. With more than 90% of the levee systems in Polk County, the City of Des Moines is easily the most exposed jurisdiction in Polk County to the potential impacts of levee failure. The City of Des Moines is identified as the entity responsible for operation and maintenance of all nine levees which protect the City. A map of the levee systems in and around Des Moines is provided below.

Figure 67. City of Des Moines Levee Systems & 0.2% Chance Flood Area



After significant flooding impacted Des moines in 2008, USACE conducted the Des Moines River Regulated Flow Frequency Study (DMRRFFS). Released in January 2011, the DMRRFFS concluded that flood flow frequencies have increased over previous estimates, and floods similar in magnitude to the 1993 and 2008 events are more likely to occur than previously believed. In response to the findings of the DMRRFFS, the City of Des Moines began the process of improving its levee systems. The City's plan to upgrade the levees would be implemented in phases:

Phase A: This phase covers improvements to the upstream reaches of the DM-I and DM-II levees along the Des Moines River. A contract was awarded to Corell Contractor, Inc. in August 2020, and construction was completed in 2022.

Phase B: This phase covers improvements to the DM-II and DM-III levee systems along the portions of the Raccoon River. A contract was awarded to Peterson Contractors, Inc. and construction is ongoing.

Phase C: This phase covers improvements to the downstream reaches of the DM-I and DM-III levee systesm along the Des Moines River near the confluence with the Raccoon River. The project was awarded to Peterson Contractors, Inc. and is currently ongoing.

Phase D: This phase covers improvements to the downstream reaches of the DM-I and DM-III levee systems along the Des Moines River from approximately 14th Street to just upsteream of the Des Moines Metropolitan Wastewater Reclamation Facility. In 2021, Des Moines and Barr Engineering Company entered into a Professional Services Agreement for design of Phase D levee improvements.

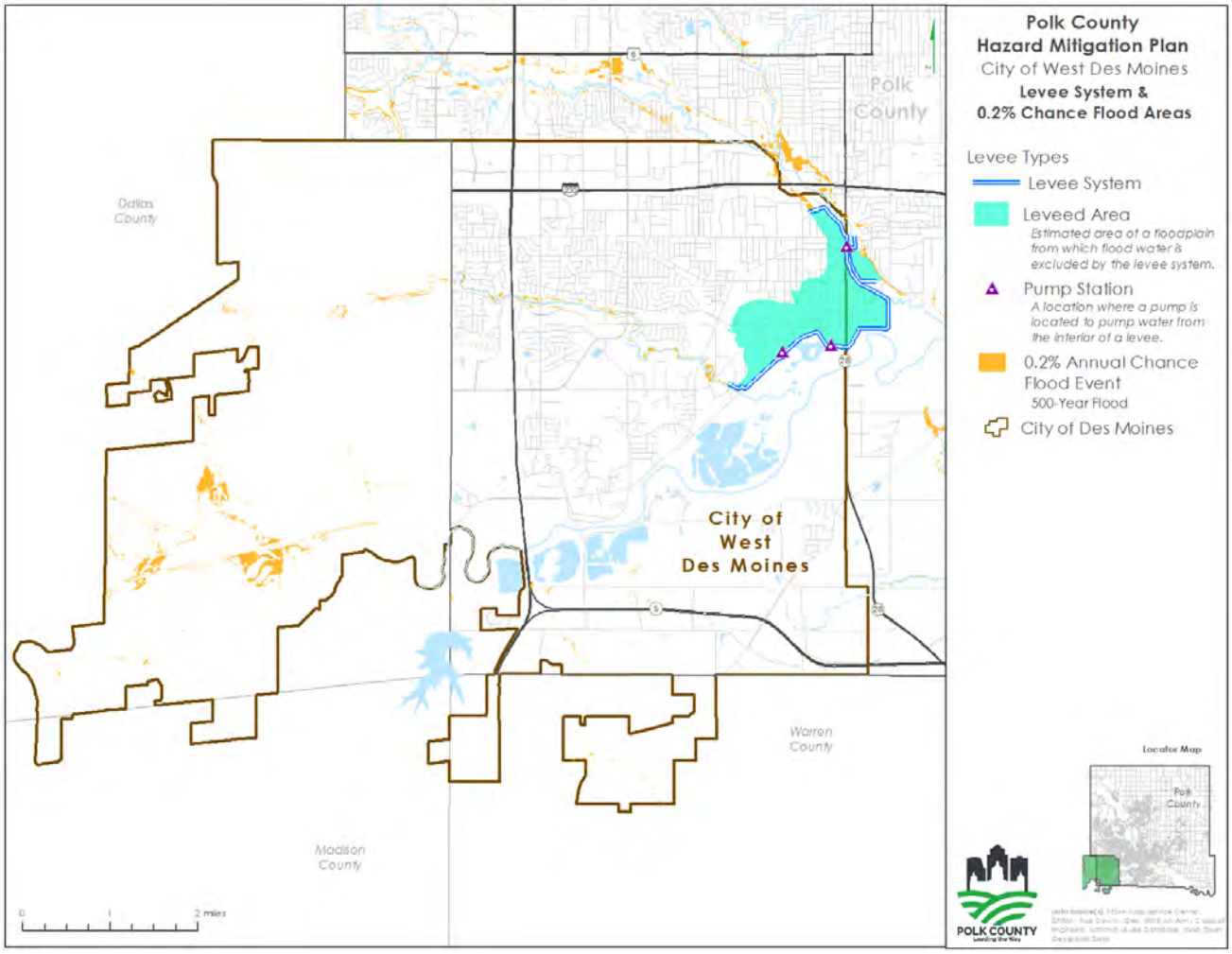
Phases E, F, G, and H: These phases cover improvements to the Southeast Des Moines levee system (SEDM), which is part of the Lake Red Rock Remedial Works and is hydraulically connected to the DM-I levee system. SEDM is an eight (8) mile levee system located along the Des Moines River starting just upstream of the Des Moines Metropolitan Wastewater Reclamation Facility to the confluence of Fourmile Creek, then runs along Fourmile Creek to about a quarter mile east of SE 30th Street. Phases F, G, and H are maintained and operated by USACE. USACE is currently responsible for the maintenance and operation of Phase E along the Des Moines Metropolitan Wastewater Reclamation Facility; however, there is an agreement in place for the City to perform general maintenance along Phase E. Recent federal legislation has provided for Phase E to become part of the DM-I levee, pending real estate transactions between the City, Wastewater Reclamation Authority and USACE. As a result of these findings, the protection levels provided by the levee systems are being re-evaluated.[16]

City of West Des Moines

The City of West Des Moines has a local flood protection levee that was designed and built by the USACE, Rock Island District that protects the City from the 1% annual chance flood from Raccoon River and Walnut Creek. The levee – simply called West Des Moinse, IA and Des Moines, IA levee system – was constructed in 1997 in response to the 1993 flooding. According to the laster performance and condition review from USACE, there is some performance uncertainty related to floodwall stability based on current I-wall criteria; however, the project has been loaded to over 80% in the past and performed well. Additionally, there is a high level of community awareness concerning floods, the evacuation effectiveness is excellent, and the project is expected to perform well during future loadings.[17] A map of the levee system impacting West Des Moines is shown below.

[16] City of Des Moines Office of the City Manager. "Council Communication: 23-307," no. 23–307 (June 26, 2023). https://councildocs.dsm.city/communications/2023/23-307.pdf.
[17] U.S. Army Corps of Engineers. "National Levee Database." levees.sec.usace.army.mil, April 5, 2024. https://levees.sec.usace.army.mil/levees/5105550006.

Figure 68. City of West Des Moines Levee System & 0.2% Chance Flood Area



Pleasant Hill and Carlisle

According to the USACE National Levee Database, Pleasant Hill and Carlisle are each behind one levee system. Pleasant Hill is behind the Des Moines, IA – DM-I & SEDM – Pleasant Hill – Lake Red Rock Remedial Works levee system. This levee system was constructed in 1970, but as of April 2024, USACE performance and condition information simply states "in progress" in the National Levee Database.[18] Carlisle is behind the Avon Station, IA – Lake Red Rock Remedial Works levee system. This system was constructed in 1969 and has an average height of 6 ft. A review of this levee's performance and condition concluded that there is a moderate likelihood of overtopping with low associated consequences. Additionally, Embankment seepage poses an unacceptable performance concern, mainly due to agricultural activity on the toe of the levee which is damaging the clay blanket and possibly shortening any seepage paths. The long loading duration and possible deep inundation depths are somewhat offset by the relatively flood risk aware population, well planned flood warning

[18] U.S. Army Corps of Engineers. "National Levee Database." levees.sec.usace.army.mil, April 5, 2024. https://levees.sec.usace.army.mil/levees/5105950071.

methods, short egress routes to high ground/safety where most of the population is located, and ample warning time for evacuation.[19]

3.3.15.3 EXTENT

The levees in Polk County are designed to protect the community against 1% annual chance flooding. Events exceeding that capacity subject the levee to potential failure, the consequences of which would be additional flooding. According to the National Inventory of Levees, there are 56 critical facilities behind levees in Polk County, and inundation of these sites could have severe consequences for the surrounding communities. Perhaps the best example of this is the inundation of the Des Moines Water Works after floodwaters overtopped a nearby levee in 1993. More than 250,000 people were left without water service for nearly three weeks, and water had to be shipped in from other communities. For more information on the extent of flooding in the planning area see the river flood hazard profile.

3.3.15.4 PREVIOUS OCCURRENCES

According to the USACE National Inventory of Levees, there are no documented breaches along any levees in Polk County. However, this contradicts various news articles and reports from respectable entities like the U.S. Geological Survey documenting past flooding incidents. The following occurrences reflect information pulled from these sources.

- **2017 Birdland Park Levee Leak:** In December 2017, a concern with seepage under the Birdland Park Levee was identified. Staff from USACE and the City of Des Moines determined that the levee did not meet USACE design criteria due to a design deficiency. However, a Levee Risk Assessment later determined that the levee was safe and no additional measures were required. This was cofirmed by the Levee Safety Oversight Group in August 2021.[20]
- **2010 Birdland Park Levee Leak:** During this event, the Birdland Park Levee was closely monitored and a small “leak” or seepage was discovered. However, the levee did not fail or overtop during this event.[21]
- **2008 Birdland Park Levee Breach**: Very high water along the Des Moines River put stress on the levee system in Des Moines. The crest had passed, but water levels were still within about one foot of the record crest. A weak spot in the levee in the Birdland park area gave way in spite of efforts by citizens and the National Guard to reinforce the levee. A breach of about 100 feet in width occurred causing very rapid

[19] U.S. Army Corps of Engineers. “National Levee Database.” levees.sec.usace.army.mil, April 5, 2024. https://levees.sec.usace.army.mil/levees/5105950071.
[20] U.S. Army Corps of Engineers. “Des Moines & Raccoon Rivers, Iowa.” Rock Island District, October 30, 2023. https://www.mvr.usace.army.mil/About/Offices/Programs-and-Project-Management/District-Projects/Projects/Article/2124382/des-moines-raccoon-rivers-iowa/.
[21] Welte, Melanie. “Des Moines Levee Springs Leak.” NBC News, July 3, 2010. https://www.nbcnews.com/id/wbna38069320.

water rises of about four feet in the flooded area within an hour and about 6 feet within several hours. A mandatory evacuation order was given by the Des Moines Police. About 271 homes were affected by the flooding as well as several businesses and a high school. One fertilizer and chemical business sustained an estimated $3 million in damages and the damage to North High School was estimated at $1.1 million.[22]

- **1993 Des Moines Water Works Breach**: Record flooding in July 1993 resulted in floodwater overtopping the levee system protecting the Des Moines Water Works installation. Despite being built to a height 6 ft above the highest, previously documented flood, water from the Racccoon River overcame the levee around 1am on July 11, 1993. The inundation of the Des Moines Water Works left more than 250,000 people in the Des Moines area without water service for more than two weeks.[23]

3.3.15.5 PROBABILITY OF FUTURE OCCURRENCES

Based on the paucity of previous occurrences in the planning area, the probability of future occurrence of levee failure of the known levees in the planning area is “unlikely.”

3.3.15.6 VULNERABILITY

Levee failure is typically an additional or secondary impact of another disaster such as flooding or earthquake. The main difference between levee failure and the types of losses associated with riverine flood is that failure of any size levee in the midst of a flood event has the potential to result in more destruction to property and infrastructure as well as an increased potential for loss of life due to the speed of onset and greater depth, extent, and velocity of flooding.

Table 85. Potential Impacts of Levee Failure on Community Lifelines

Lifelines	Impact Type	Description
Safety & Security		The sudden release of water can pose immediate threats to life and property, necessitating urgent evacuation and rescue operations. Law enforcement and emergency services are vital for managing the situation, ensuring public safety, and coordinating response efforts.

[22] WHO 13 Des Moines. “Decade Anniversary: Community Remembers Birdland Levee Breach.” *Who13.Com* (blog), June 14, 2018. https://who13.com/news/decade-anniversary-community-remembers-birdland-levee-breach/.
[23] KCCI Des Moines. “30 Years Later: What Led up to the Devastating Flood of ’93 in Iowa.” KCCI, July 15, 2023. https://www.kcci.com/article/flood-of-1993-des-moines-iowa-30th-anniversary/44496812.

Lifelines	Impact Type	Description
Health & Medical		Injuries and potential loss of life due to flooding require emergency medical services. Healthcare facilities need to be prepared for an influx of patients and possible challenges in maintaining operations, especially if they are in the flood zone.
Housing & Building Infrastructure		Flooding from levee failures can cause extensive damage to homes, businesses, and infrastructure, resulting in displacement of residents, and necessitating significant reconstruction efforts.
Utilities		Levee failures can disrupt essential services such as electricity, water supply, and communication networks, both directly through physical damage and indirectly due to access issues.
Transportation		Roads, bridges, and rail lines may be damaged or rendered impassable, disrupting the movement of people and goods and complicating rescue and recovery efforts.
Economic Stability		The economic impacts include the immediate costs of emergency response and infrastructure repairs, as well as longer-term effects on local economies due to business interruptions and loss of property.
Environmental & Ecological		A levee failure can lead to environmental disasters, impacting water quality, wildlife habitats, and local ecosystems. Remediation and ecological restoration efforts may be required in the aftermath.

A) People

Levee failure allows water to inundate an area which would otherwise be dry. Because the consequences of levee failure largely mirrors that of flooding, the populations vulnerable to levee failure are largely the same as those which are vulnerable to river and flash flooding. Reference the vulnerability sections of the flash flooding and river flooding hazard profiles for additional information.

B) Structures

According to the USACE National Levee Database, there are 4,024 buildings behind levees in Polk County. Water damage resulting from a levee failure is no different than water damage brought on by flash and river flooding. For additional information on the vulnerability of structures to water inundation reference the vulnerability sections of the flash flooding and river flooding hazard profiles.

C) Systems

According to the USACE National Levee Database, there are 56 critical facilities behind levees in Polk County. In the event of levee failure, these facilities would be exposed to the consequences of water inundation. For additional information on the impacts of water inundation on critical facilities reference the vulnerability sections of the flash flooding and river flooding hazard profiles.

D) Natural, Historic, and Cultural Resources

Natural, historic, and cultural resources in Polk County which are behind levee systems are vulnerable to water inundation in the event of a levee failure. Natural, cultural, and historic resources in Polk County which are behind levees include: Des Moines Water Works Park, Denman's Woods Trail, Pete Crivaro Park, and Gray's Station Wetland. For additional information on the consequences of water inundation on natural, historic, and cultural resources reference the vulnerability sections of the flash flooding and river flooding hazard profiles.

E) Community Activities

Community activities which rely on space behind levees in Polk County may need to be postponed or relocated in the event of a levee failure. For additional information on how water inundation can disrupt community activities reference the vulnerability sections of the flash flooding and river flooding hazard profiles.

Existing Development

It is difficult to determine specific economic losses to existing development as a result of levee failure. A wide variety of assets and buildings would be sustantially damaged, and loss of life as a result of levee failure may be greater than that of riverine flood due to the speed of onset and the velocity and wave action that would occur. According to data from the National Levee Database, the total value of property behind levees in Polk County is $5,997,572,734. Development in the communities of Carlisle, Des Moines, Pleasant Hill, and West Des Moines is vulnerable to levee failure in Polk County.

Future Development

Additional development in the areas protected by the levees in the communities of Carlisle, Des Moines, Pleasant Hill, and West Des Moines would increase the vulnerability to this hazard. Between 2010 and 2020 all four of these jurisdictions experienced population growth.

Climate Change

Climate change may increase the likelihood of flooding (both riverine and flash), which may increase the likelihood of levee failure within the planning area. Following the 2008 flooding, the USACE conducted a study which found that flood flow frequencies in the Des Moines area have increased over preivous estimates, and floods similar in magnitude to the 1993 and 2008 events are more likely to occur than previously assessed. However, the report declined to consider whether climate change played a role in these changes.

Hazard Risk Score

Table 86. Levee Failure Probability and Health Impact Ratings

Health Severity	Community Impact	Public Health System Impact	Healthcare System Impact	Total Health Hazard Score	Probability
1	2	1	1	5	Unlikely

3.3.16 RIVER FLOODING

3.3.16.1 DESCRIPTION

A flood is partial or complete inundation of normally dry land areas. Flooding has been a major problem for many of the communities in Polk County. Many of the communities were settled and developed largely because of their proximity to water resources. Heavy precipitation can cause flooding either in the region of precipitation or in areas downstream. Heavy accumulations of ice or snow can also cause flooding during the melting stage. These events are complicated by the freeze/thaw cycles characterized by moisture thawing during the day and freezing at night. There are two main types of flooding in the planning area: riverine/flouvial flooding and flash flooding which includes ice jam flooding. Flash flooding is discussed in a separate section**.** Flooding caused by dam and levee failures are also separate sections.

Riverine flooding is defined as the overflow of rivers, streams, drains, and lakes due to excessive rainfall, rapid snowmelt or ice melt. The areas adjacent to rivers and stream banks that carry excess floodwater during rapid runoff are called floodplains. A floodplain is defined as the lowland and relatively flat area adjoining a river or stream. The terms “base flood” and “100-year flood” refer to the area in the floodplain that is subject to a one percent or greater chance of flooding in any given year. Floodplains are part of a larger entity called a basin, which is defined as all the land drained by a river and its branches.

3.3.16.2 LOCATION

For purposes of this hazard profile and vulnerability analysis, the geographic location/extent for river flooding will be primarily considered as those areas at risk to the 100-year flood (also known as the 1% annual chance flood). The 1% annual chance flood has been adopted by FEMA as the base flood for floodplain management purposes. However, the accompanying maps also show the 500 year floodplains for two major reasons. First, climate models suggest that the planning area should anticipate rain events with increasing intensity in the coming years and decades. Second, Polk County has experienced consistent population growth over past decades, and this trend is expected to continue. Continued population growth may result in new development within or near 500 year floodplains. The figures below illustrate the areas within Polk County and participating jurisdictions which are vulnerable to flooding in 100-year (1%) and 500-year (0.2%) flooding events.

Figure 69. Polk County Flood Hazard Areas

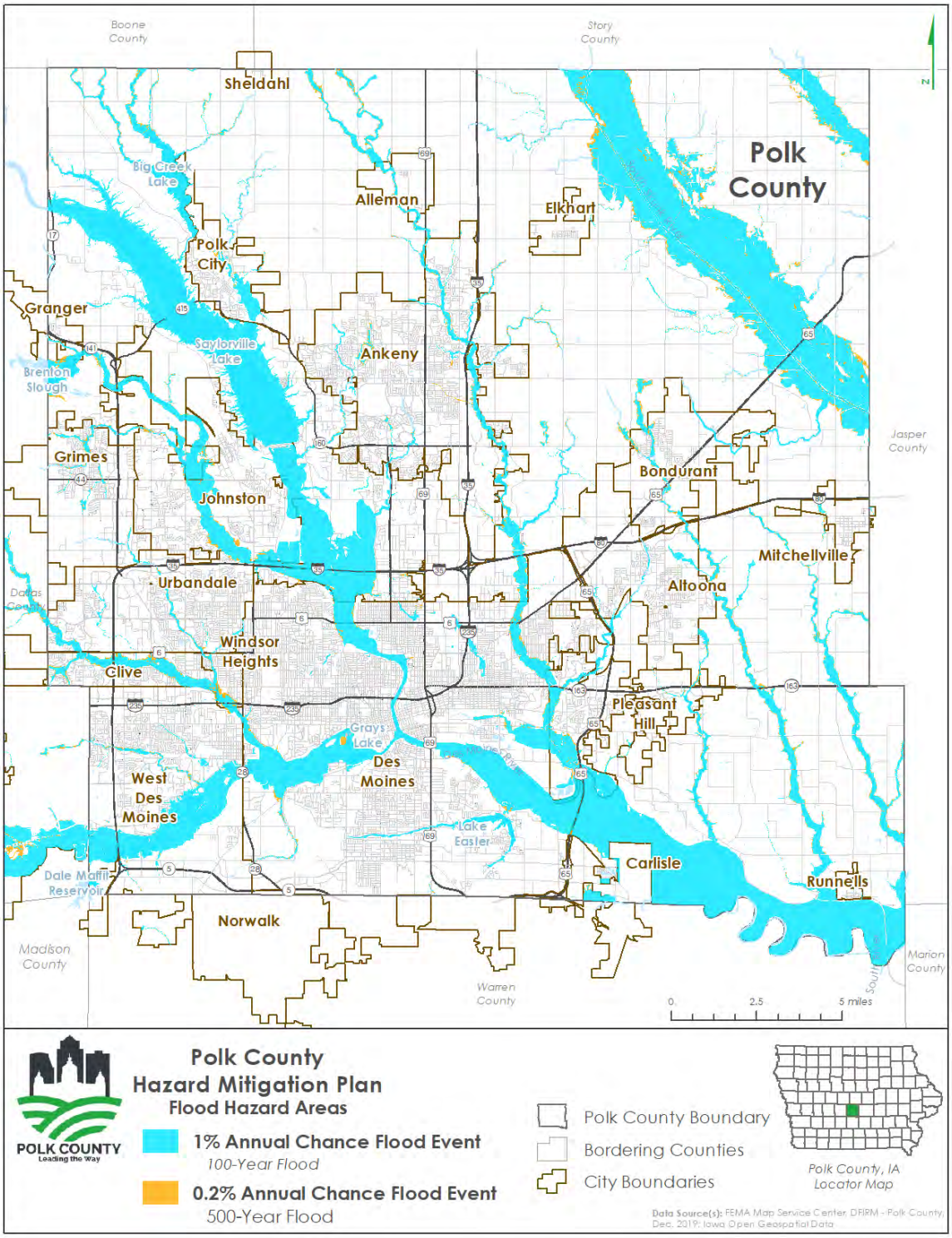


Figure 70. City of Alleman Flood Hazard Areas

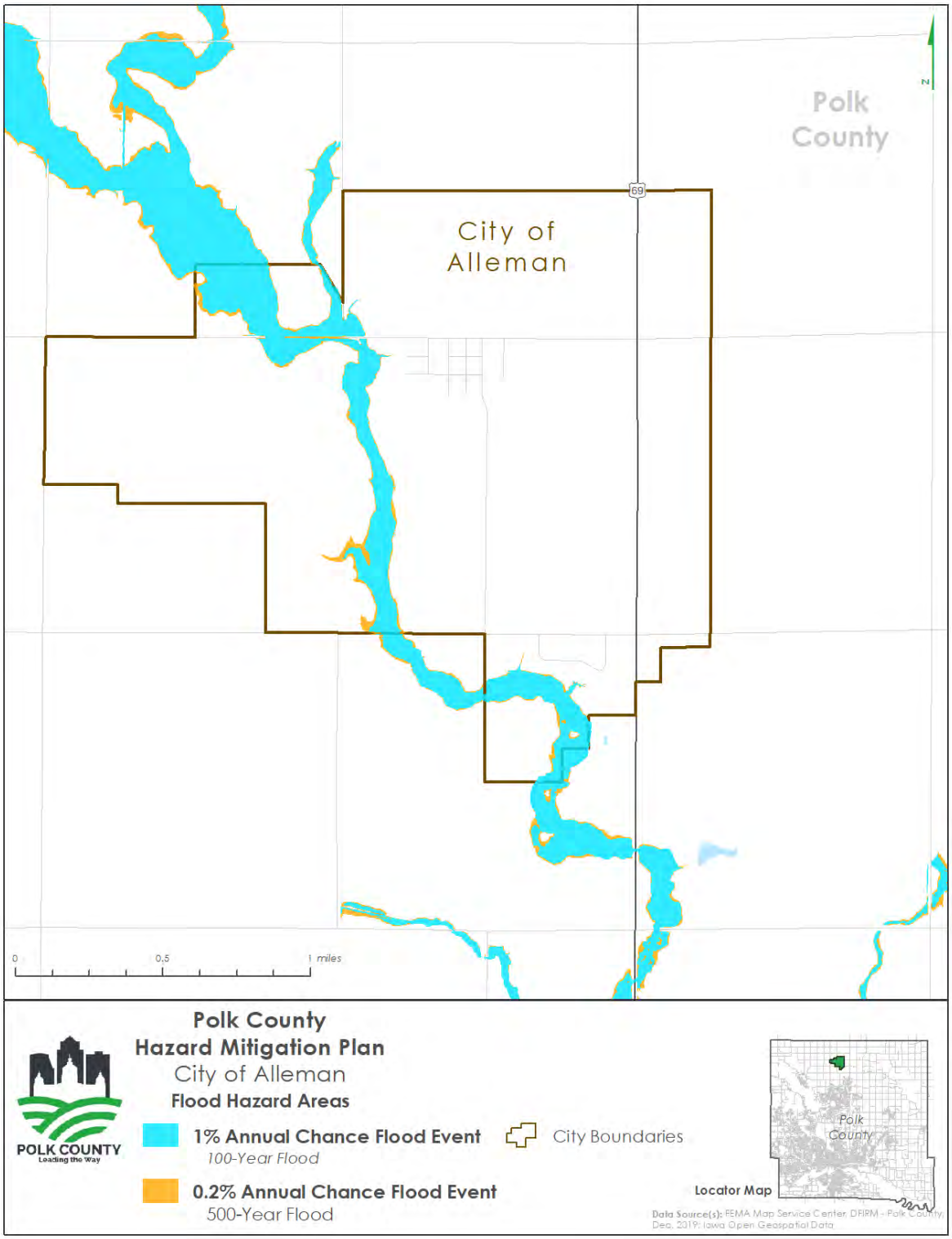


Figure 71 – City of Altoona Flood Hazard Area

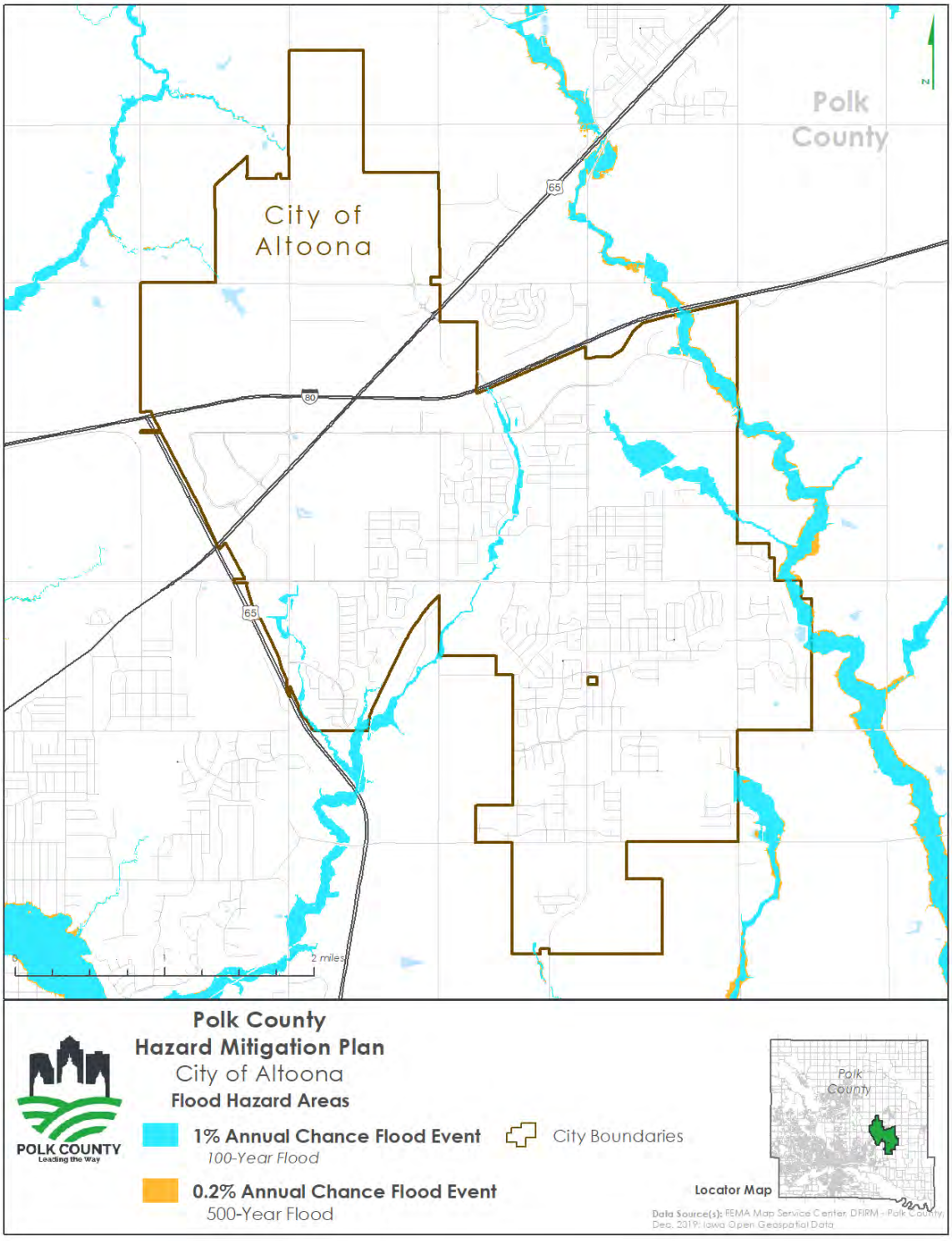


Figure 72 - City of Ankeny Flood Hazard Areas

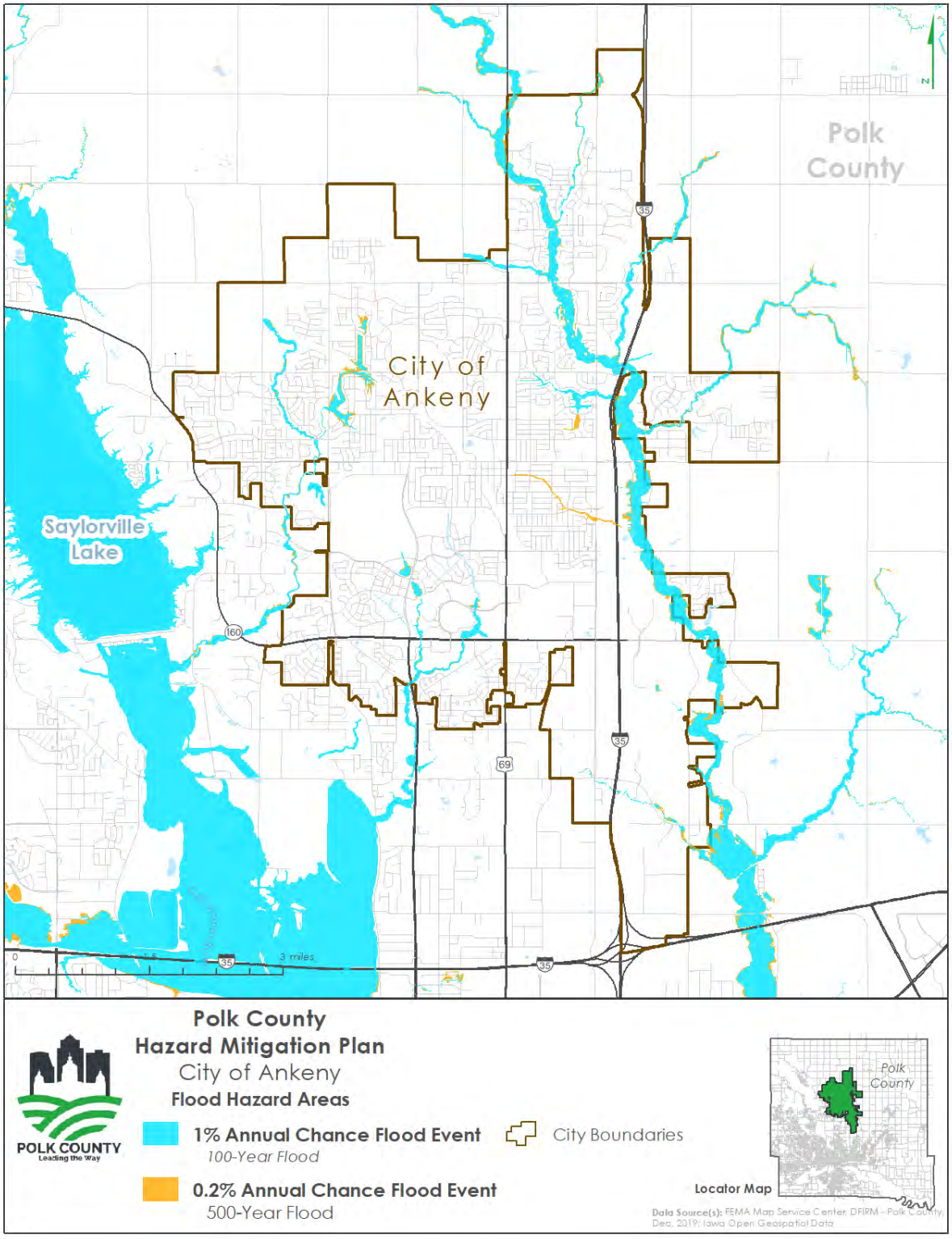


Figure 73 – City of Bondurant Flood Hazard Area

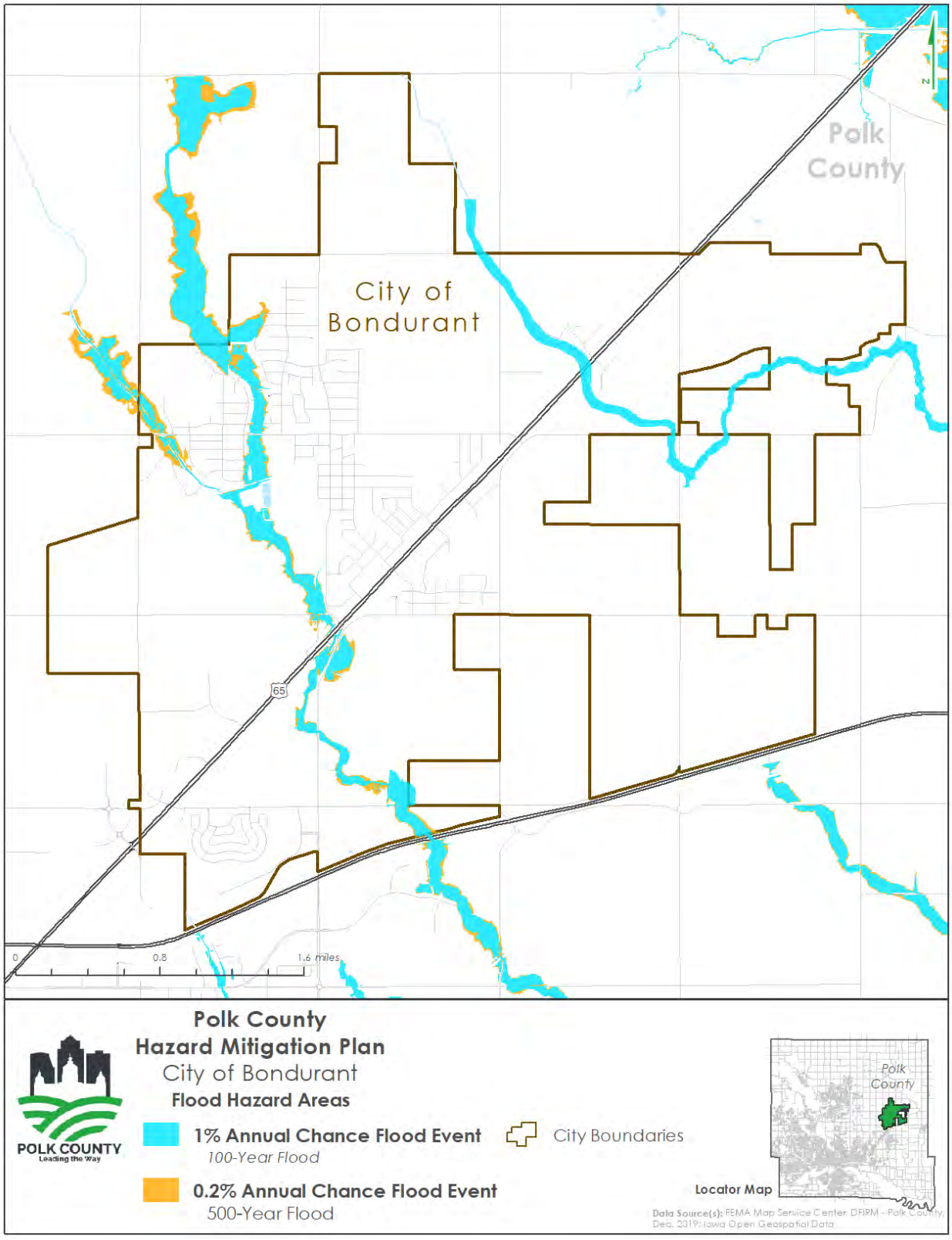


Figure 74 – City of Clive Flood Hazard Area

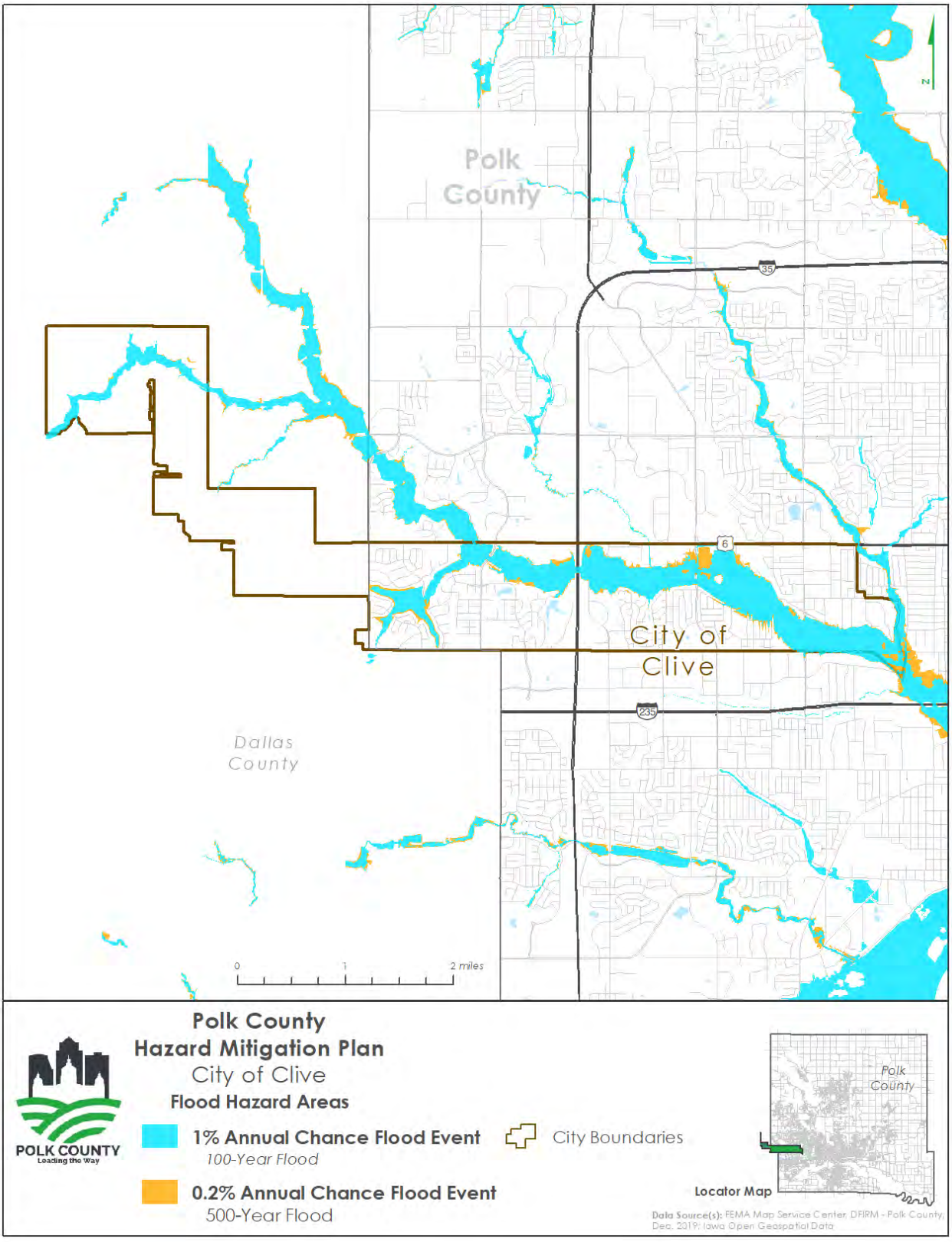


Figure 75: Delaware Township Flood Hazard Map

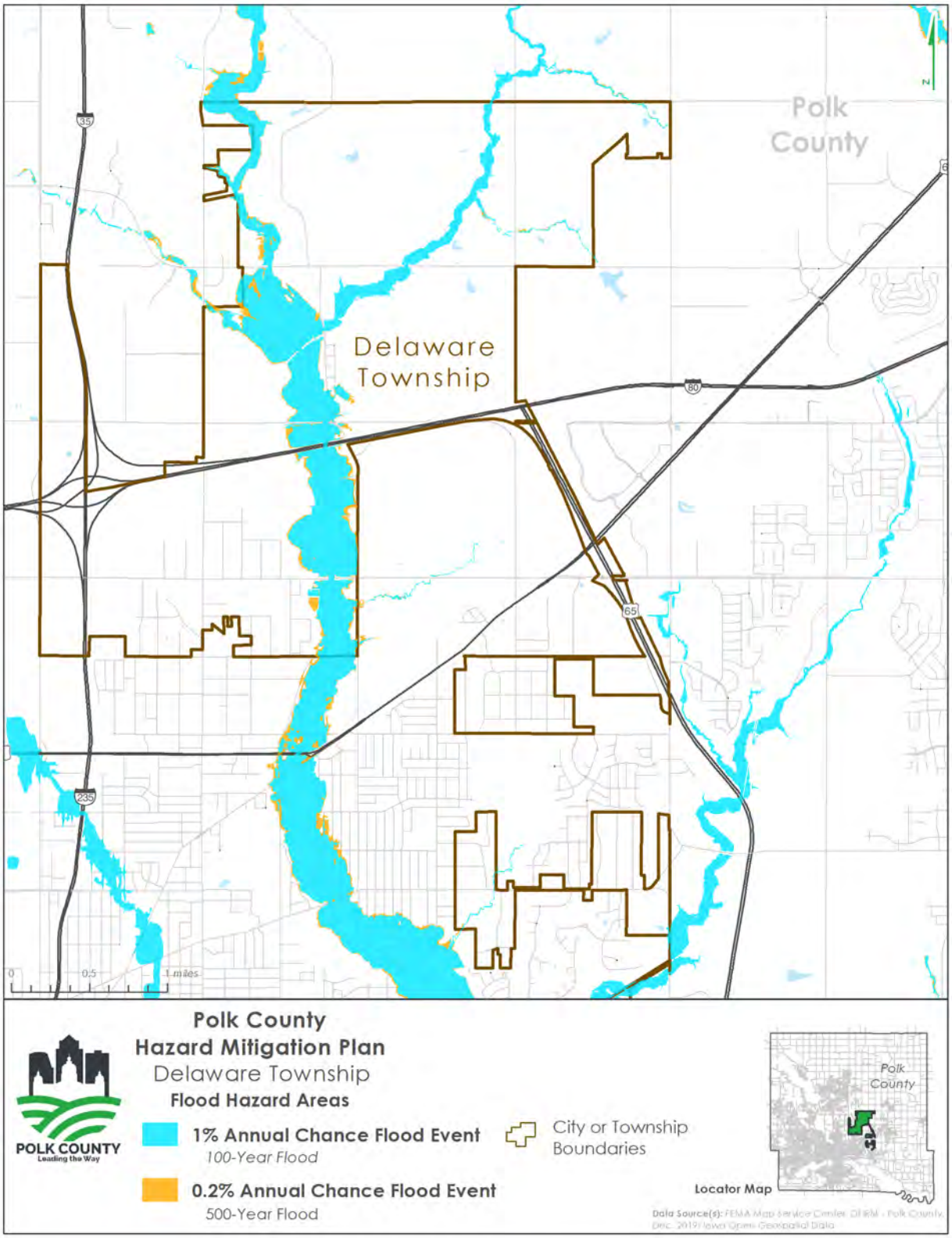


Figure 76 – City of Des Moines Flood Hazard Area

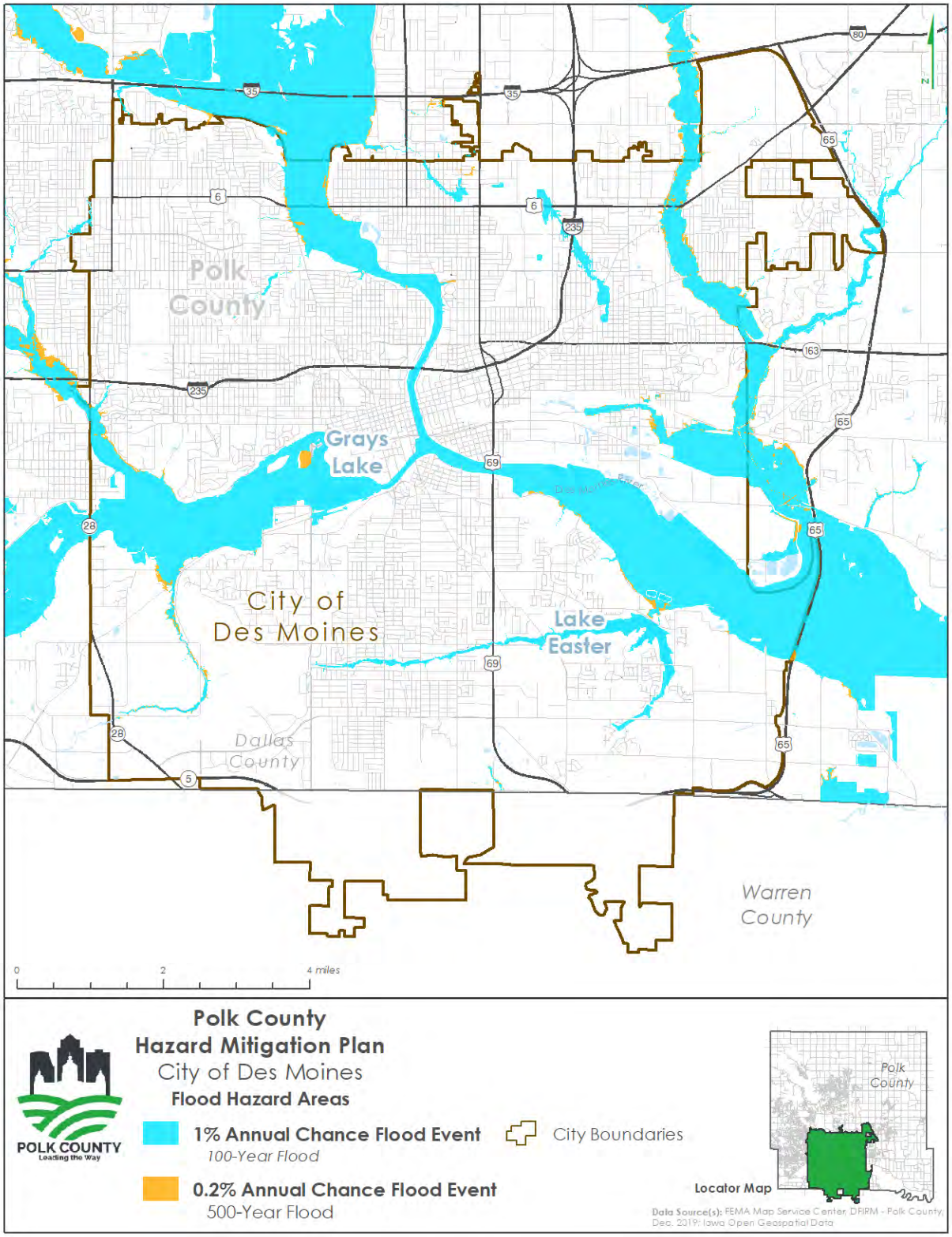


Figure 77 – City of Elkhart Flood Hazard Area

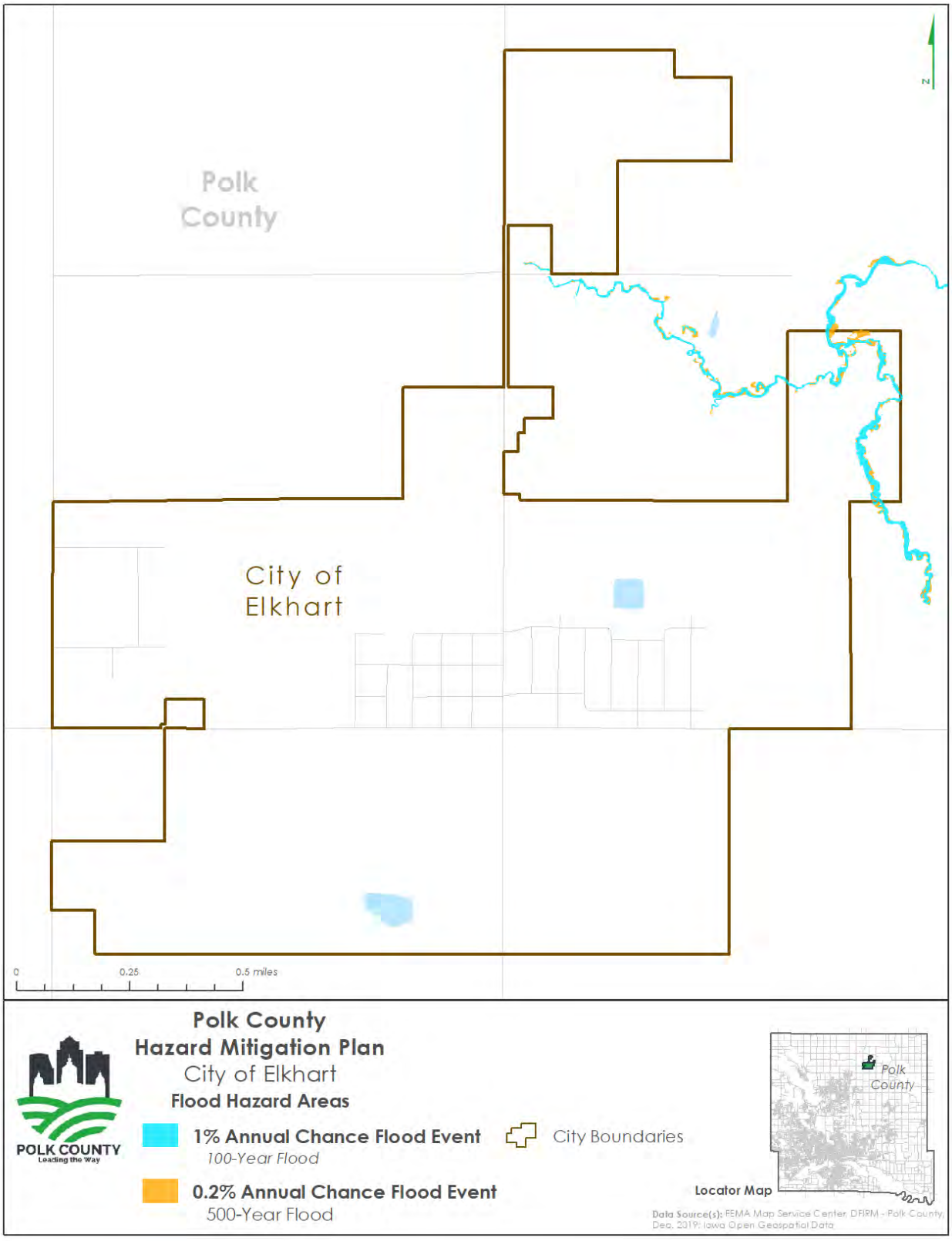


Figure 78 – City of Grimes Flood Hazard Area

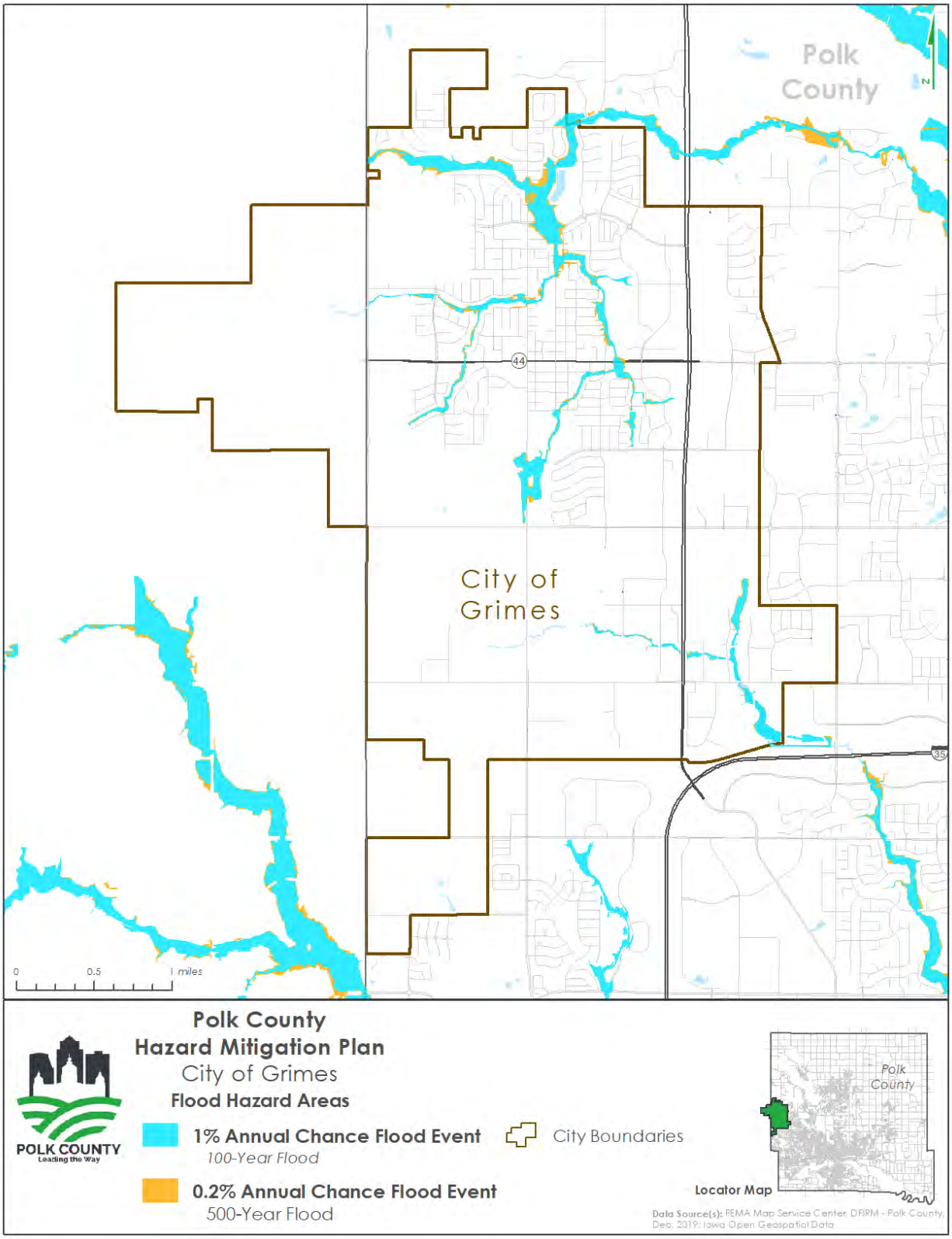


Figure 79 – City of Johnston Flood Hazard Area

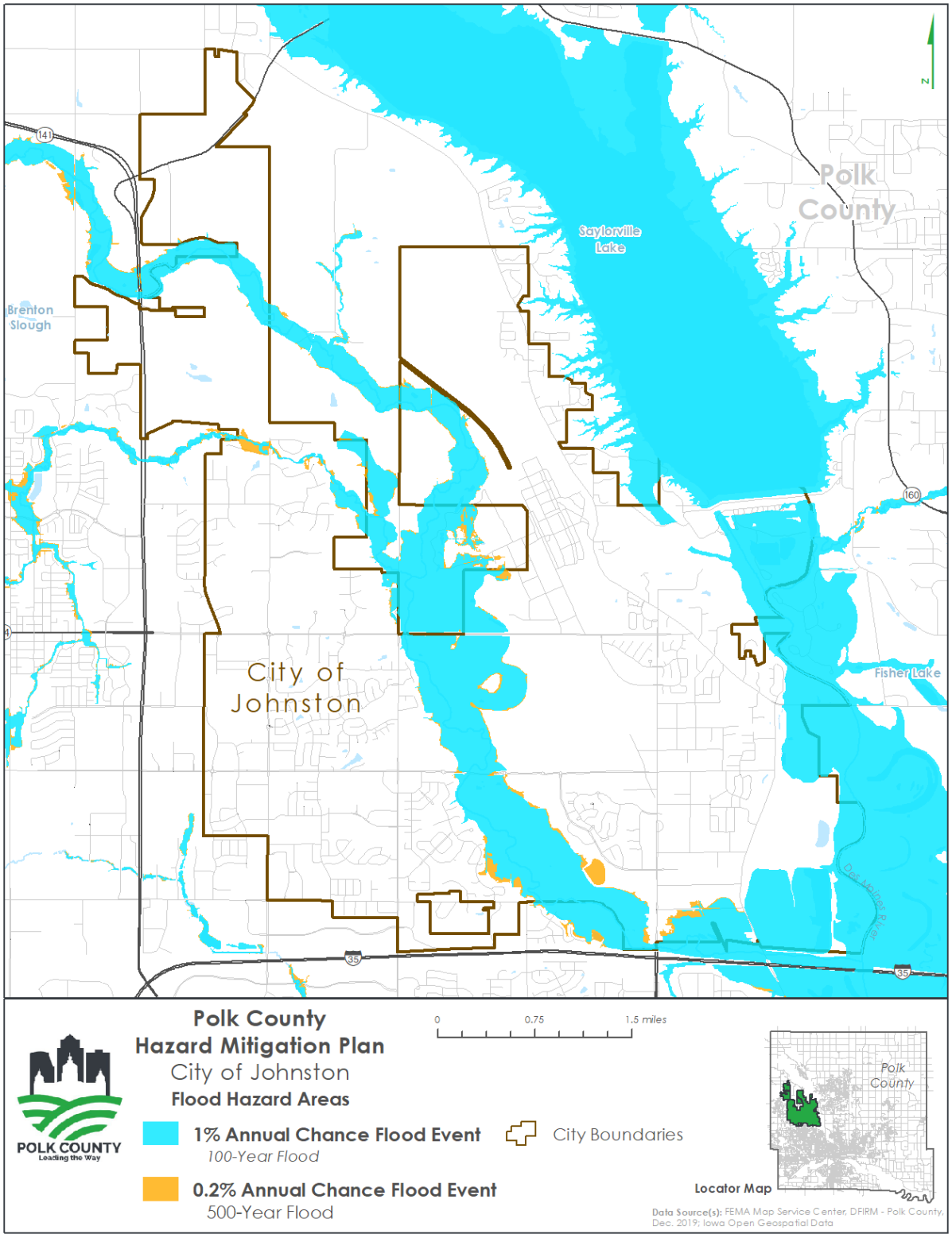


Figure 80 – City of Mitchellville Flood Hazard Area

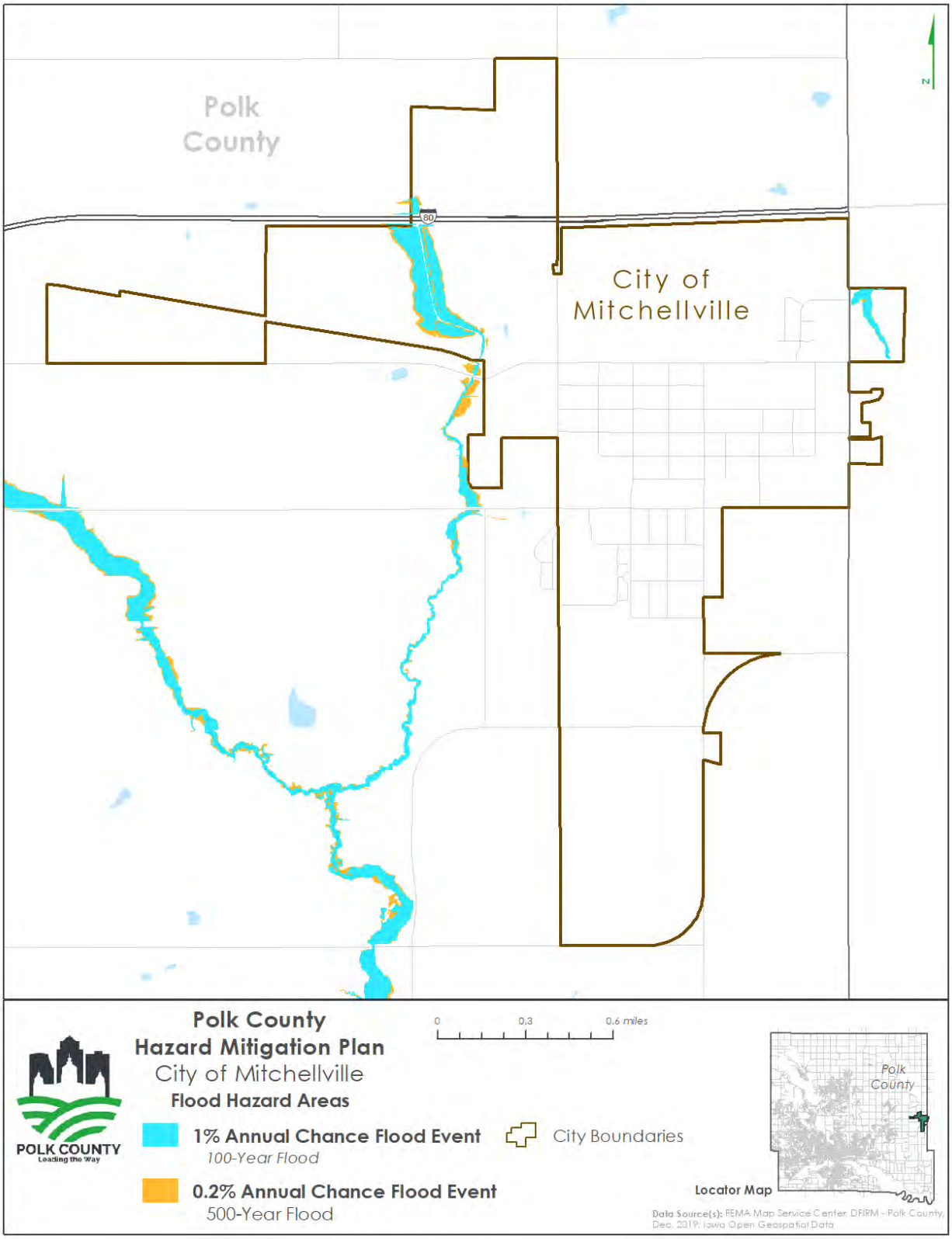


Figure 81 – City of Pleasant Hill Flood Hazard Area

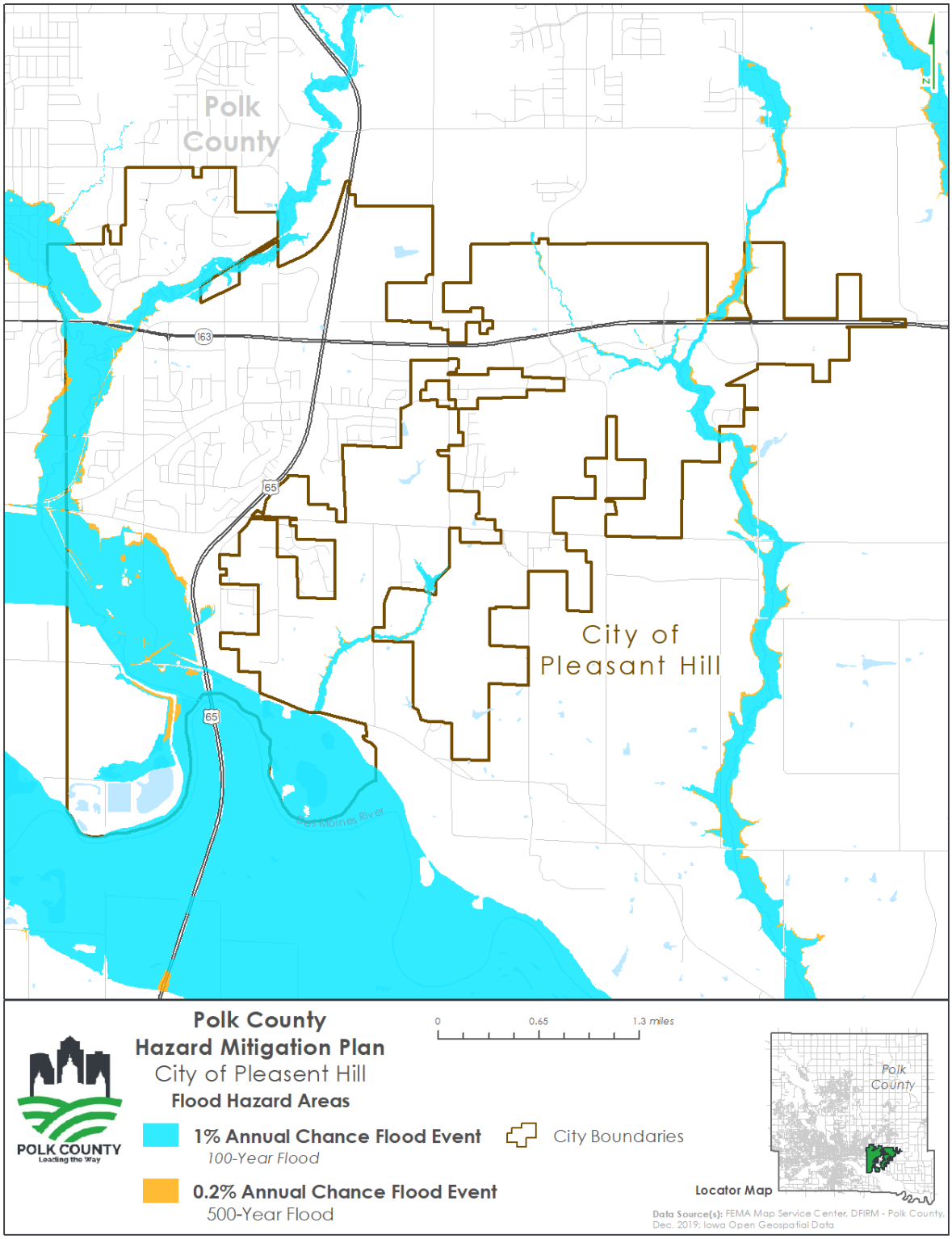


Figure 82 – City of Polk City Flood Hazard Area

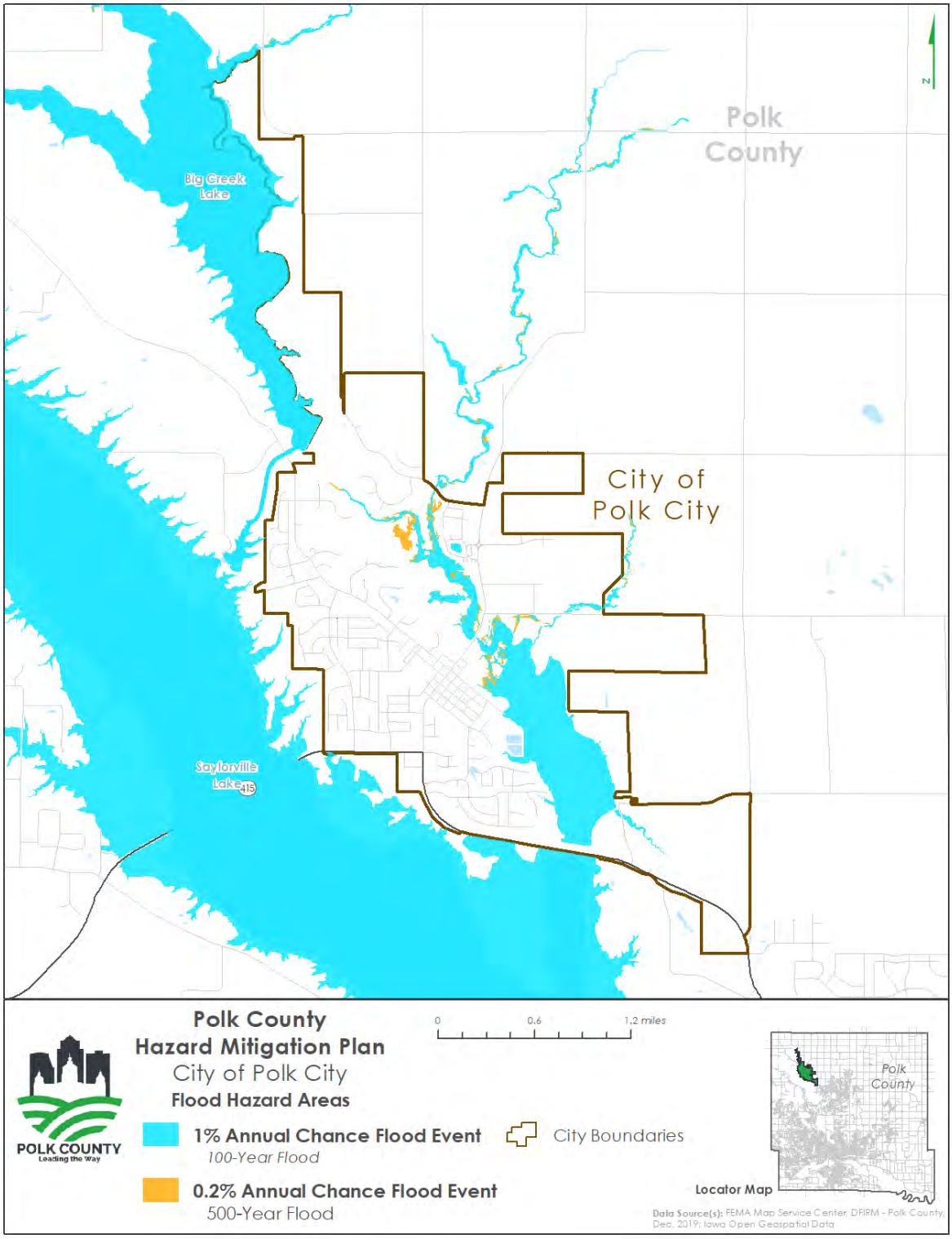


Figure 83 – City of Runnells Flood Hazard Area

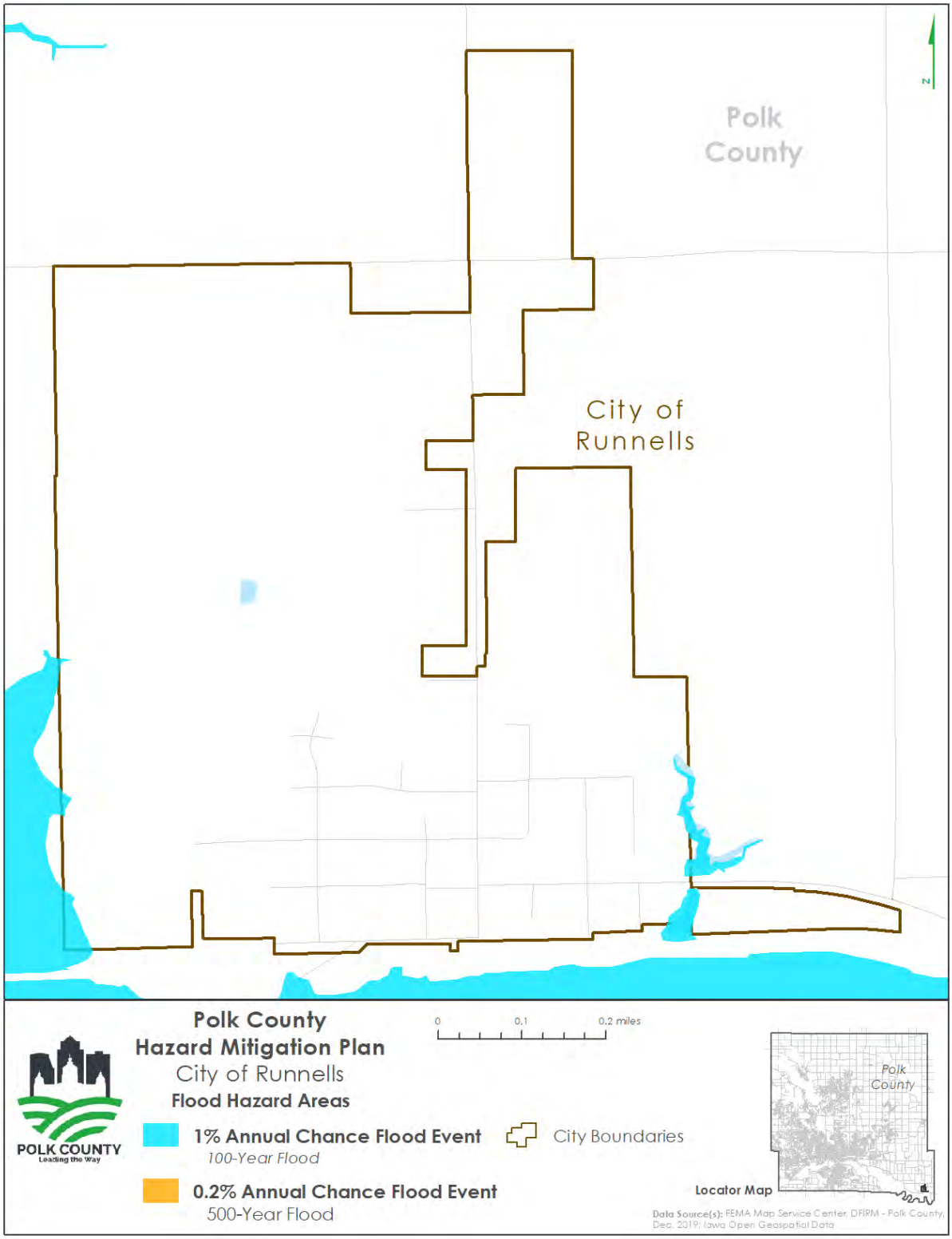


Figure 84 – Saylor Township Flood Hazard Area

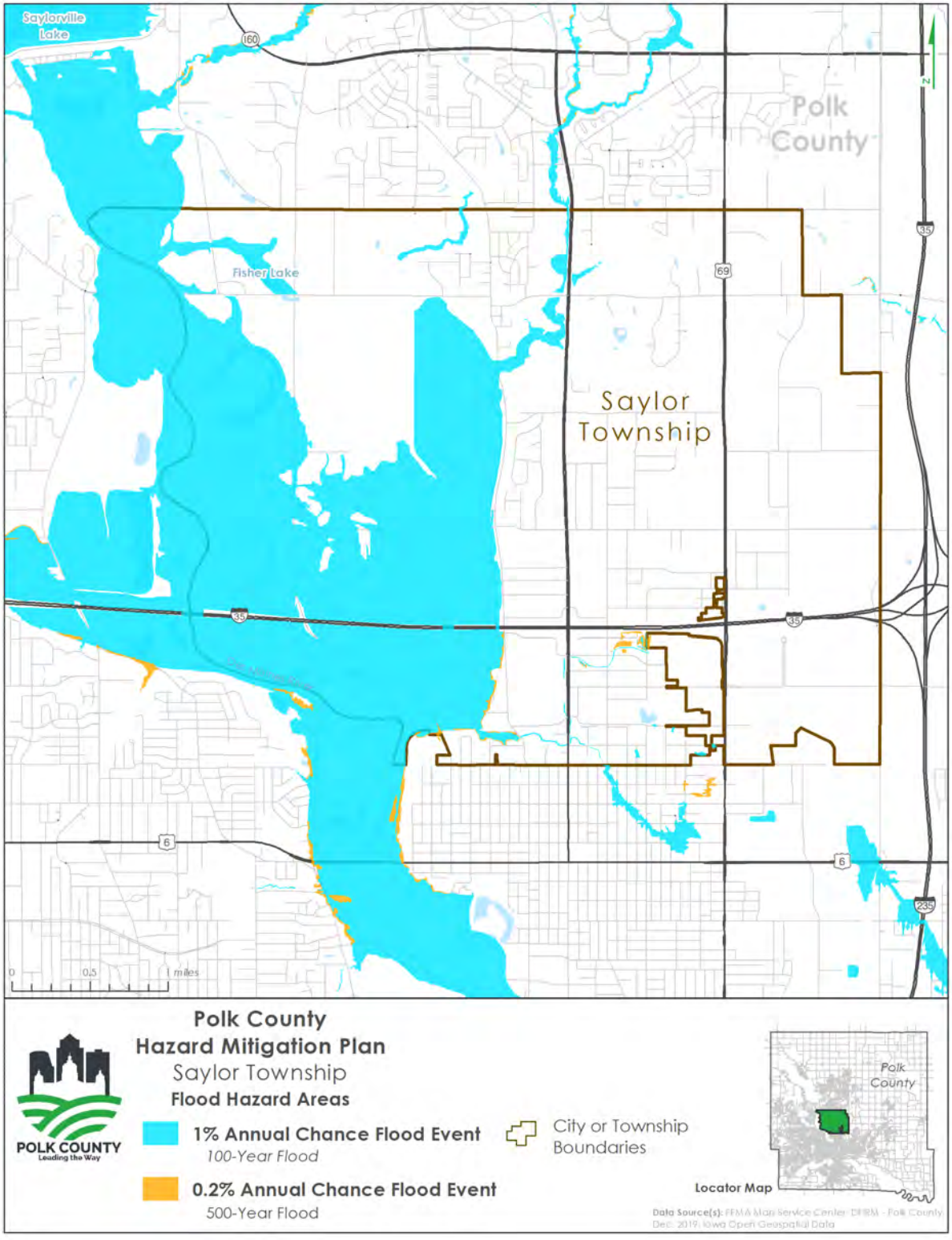


Figure 85 – City of Urbandale Flood Hazard Area

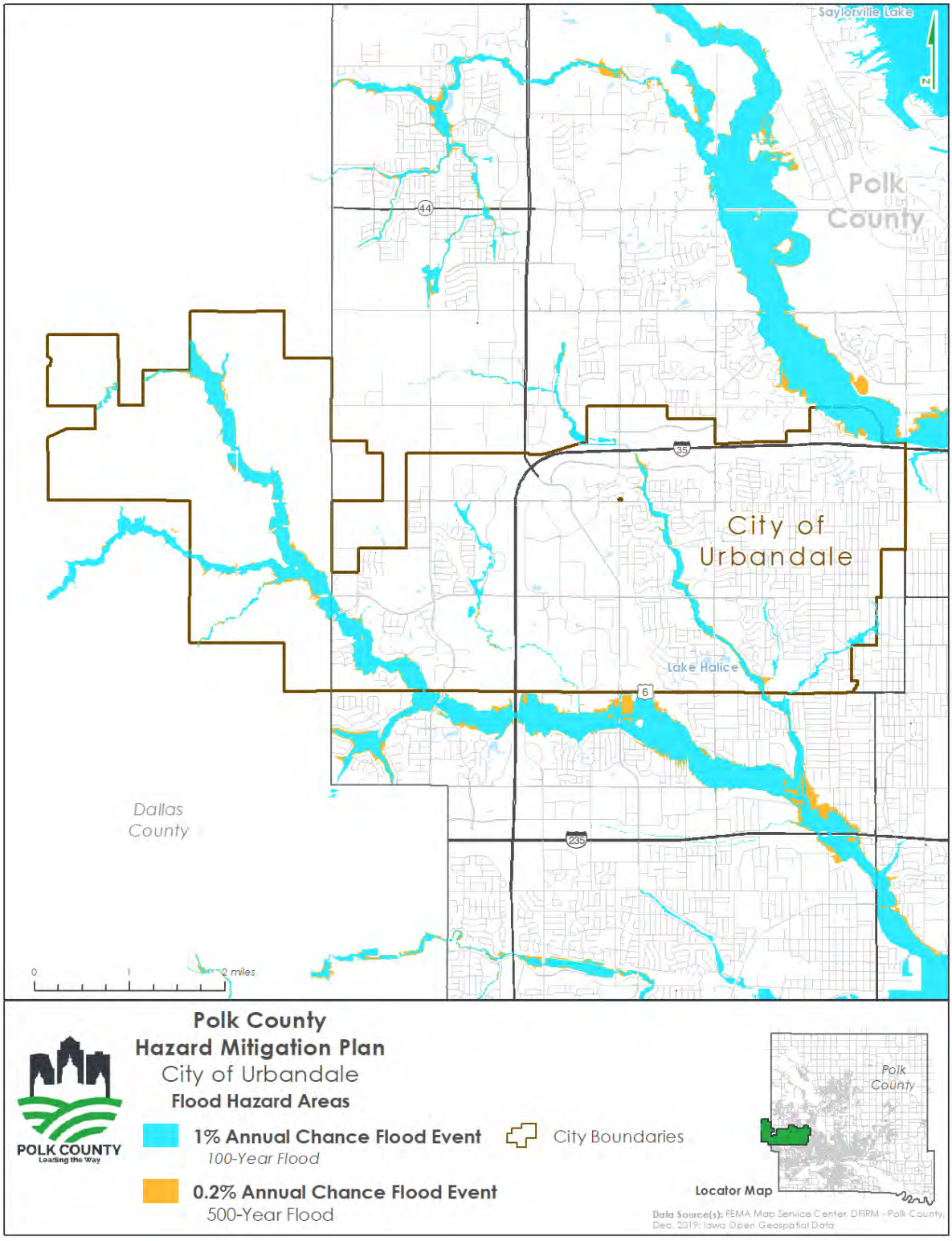


Figure 86 – City of West Des Moines Flood Hazard Area

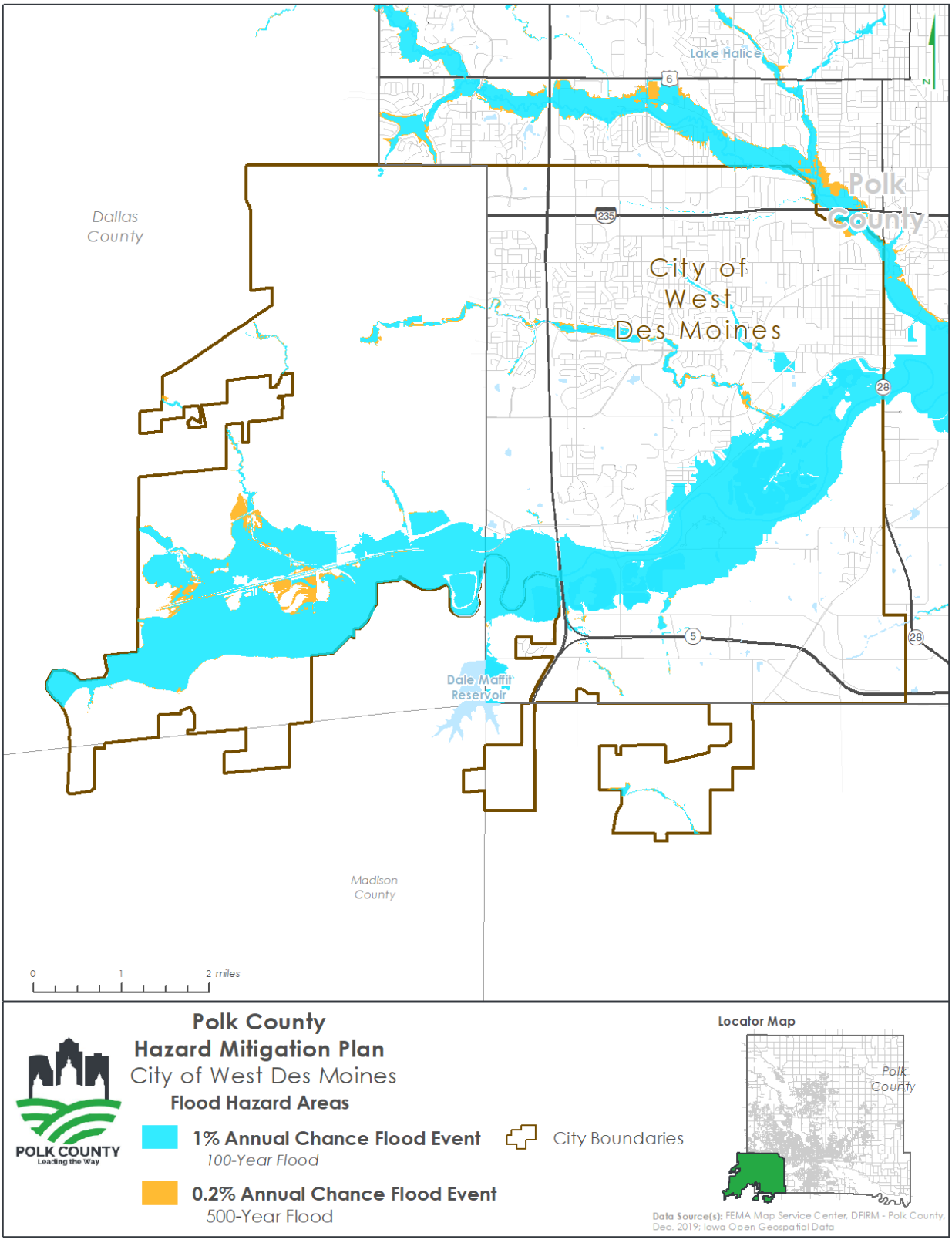
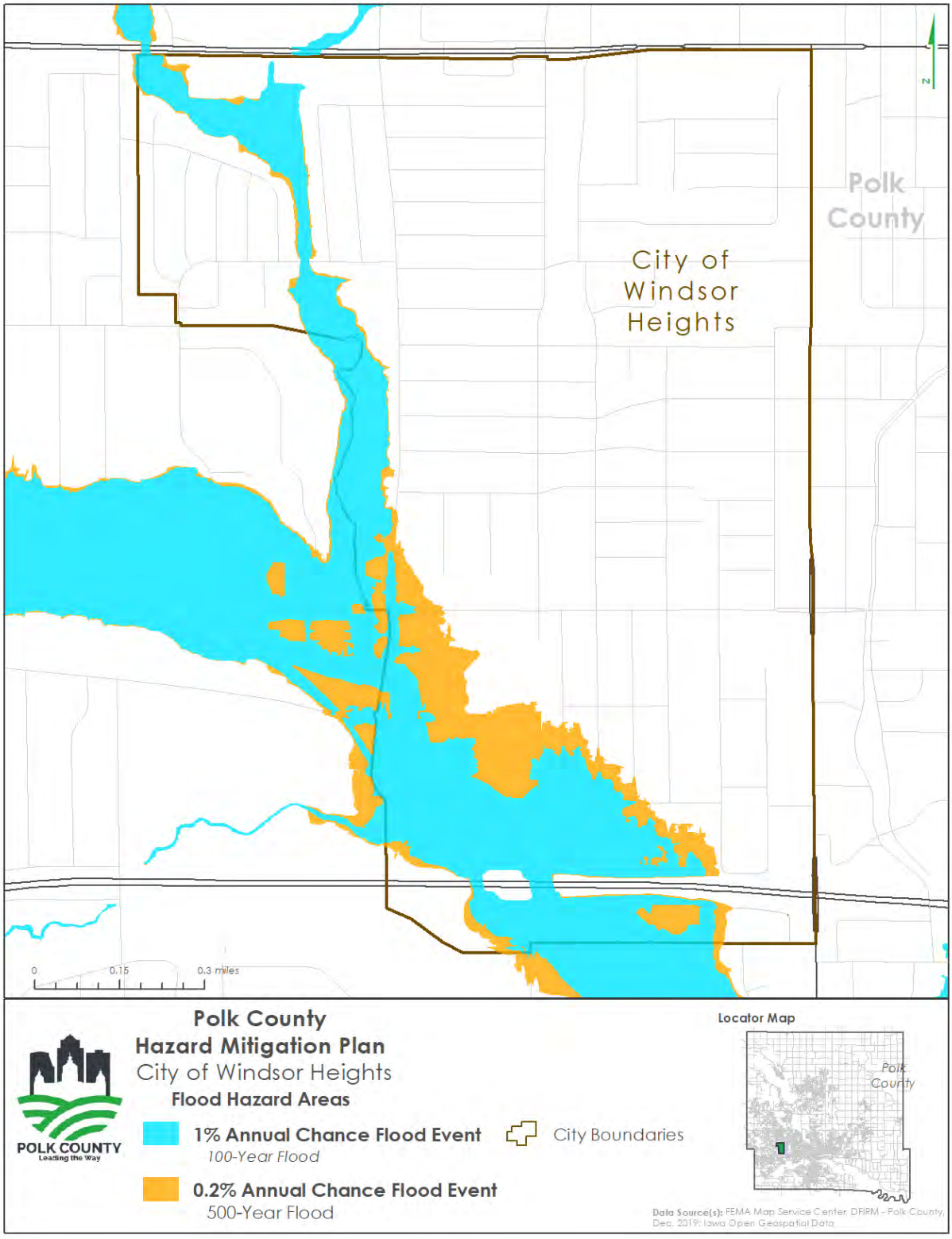


Figure 87 – City of Windsor Heights Flood Hazard Area



3.3.16.3 EXTENT

Riverine flooding is among the most significant hazards in the planning area for a variety of reasons. First, the hazard can extend over a relatively large geographic area, threatening a significant number of people and properties. Second, the dangers associated with flooding manifest with ease – just an inch of water can cause tens of thousands of dollars worth of property damage, and adults can be swept away by as little as six inches of moving water.[24] Furthermore, it only takes a foot of moving water to wash away most cars. The danger of floodwater can be deceptive, and it is common for individuals to attempt to drive through water which they *perceive* as safe. Sadly, such a misjudgement can have dire consequences, and more than half of all flood-related deaths occur as a result of vehicles driving into hazardous floodwater.[25] Third, flooding generally tends to be longer-lasting than many other hazards. It can take days or weeks for floodwaters to recede, and during this time people will be displaced, transportation and utility services will be limited, and community activities will be disrupted.

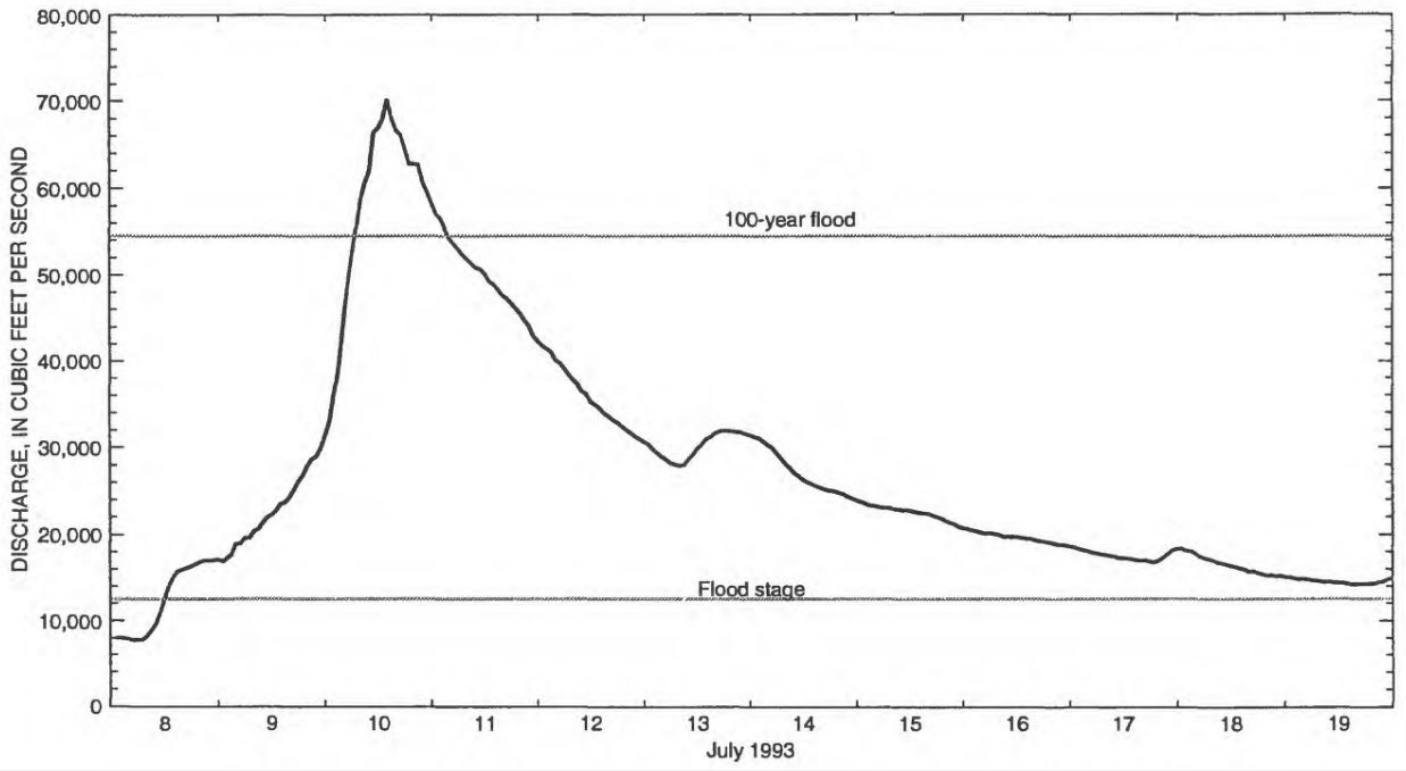
Across its history Polk County has experienced several major flooding events, with the two most severe events occurring in 1993 and 2008.

1993 Flooding

The 1993 flood – sometimes called the "Great Flood of 1993" – is arguably the worst flooding event in Polk County's history. Record rainfall throughout spring and early summer in the midwest led to extensive flooding, including in Polk County. On July 10th, discharge at the a gaging station along the Raccoon River tripled (going from 23,500 ft^3/s to 70,100 ft^3/s), and floodwaters reportedly rose by nearly a foot every hour.[26] On the evening of July 10, 1993, a break occurred in the West Des Moines levee and businesses nearby weer quickly inundated with more than 5 ft of water. Evacuation orders for the area were issued at approximately 8pm. The flooding continued to spread, and by 1am on the morning of July 11 floodwaters overtopped a levee protecting the Water Works for the City of Des Moines. The levee built to protect this installation was more than 6 ft higher than the highest, previously known flood. The flooding at this site cut off water service to the Des Moines area, leaving more than 250,000 people without water service for 19 days.[27] Truckloads of potable water were hauled to Des Moines and distributed at 29 area grocery stores.

[24] US Department of Commerce, NOAA. "Turn Around Don't Drown." weather.gov. NOAA's National Weather Service. Accessed April 3, 2024. https://www.weather.gov/safety/flood-turn-around-dont-drown.
[25] US Department of Commerce, NOAA. "Turn Around Don't Drown." weather.gov. NOAA's National Weather Service. Accessed April 3, 2024. https://www.weather.gov/safety/flood-turn-around-dont-drown.
[26] Eash, David, and Barbara Koppensteiner. "Flood of July 9-11, 1993, In the Raccoon River Basin, West-Central Iowa." Open-File Report. Open-File Report. U.S. Geological Survey, 1997. https://pubs.usgs.gov/of/1997/0557/report.pdf.
[27] Eash, David, and Barbara Koppensteiner. "Flood of July 9-11, 1993, In the Raccoon River Basin, West-Central Iowa." Open-File Report. Open-File Report. U.S. Geological Survey, 1997. https://pubs.usgs.gov/of/1997/0557/report.pdf.

Figure 88. Discharge at the Raccoon River at Station Number 05484500 July 8-19, 1993



The extent of flooding in the Des Moines area continued to grow, and multiple electrical substations were inundated, resulting in power outages in many parts of Des Moines, including all of the downtown area. Many major roadways were also submerged, further complicating response operations. Thousands of residents were evacuated, and both Des Moines and West Des Moines declared states of emergency. Over the next two weeks, local, state, and federal resources worked around the clock to preserve, as much as possible, people and property, as well as restoring critical services. Potable water service was finally restored on July 29, but much work remained. The Mayor of Des Moines at the time was quoted as saying "It wil ltake six months to get homes cleaned up, small businesses reoped, streets repaired, and people fairly comfortable and safe again. Then we'll be gearing up for snowstorms and ice."[28] The flooding of 1993 predates NCEI data on financial impacts of flooding events, but Des Moines officials at the time estimated flood damage to the city and its residents exceeded $250,000,000.[29]

2008 Flooding

[28] Sahagun, Louis. "The Calm Before Cleanup in Des Moines: Flooding: The City Is 'strangely Quiet' While Residents Wait for Water to Be Restored. Then Will Come the Massive Chore of Clearing Away the Muck." Los Angeles Times, July 22, 1993. https://www.latimes.com/archives/la-xpm-1993-07-22-mn-15700-story.html.

[29] Eash, David, and Barbara Koppensteiner. "Flood of July 9-11, 1993, In the Raccoon River Basin, West-Central Iowa." Open-File Report. Open-File Report. U.S. Geological Survey, 1997. https://pubs.usgs.gov/of/1997/0557/report.pdf.

An unusually wet winter and spring resulted in significant flooding across the State of Iowa in late May and early June 2008. While the most severe flooding occurred in eastern Iowa, Polk County still experienced significant damage from floodwaters. NCEI data shows that between May 30th and June 12, 2008, flooding in Polk County resulted in approximately $61,000,000 in damages.[30] The actions taken following the flooding of 1993 may have helped lessen the impact of the 2008 flood – improvements to levees and flood walls prevented the inundation of critical facilities including water and wastewater treatment facilities as well as most electrical substations. However, a portion of the levee near the Birdland area of Des Moines failed, flooding more than 200 homes and 30 businesses. Mandatory evacuations were issued for the most at-risk portions of the Des Moines area.

Gauges along streams and rain gauges throughout the state provide for an early flood warning system. Riverine flooding usually develops over the course of several hours or even days depending on the basin characteristics and the position of the particular reach of the stream. The National Weather Service and the Iowa Flood Center (through the Iowa Flood Information System – IFIS) both provide flood forecasting and early warning. Flood warnings are issued over emergency radio and television messages as well as the NOAA Weather Radio. The National Weather Service issues flood alerts described in Table 87 to give adequate time for people to take appropriate actions to limit harm to themselves and – if possible – their property.

Table 87. National Weather Service Flood Alerts

Alert	Description
Flood Warning	A Flood Warning is issued when the hazardous weather event is imminent or already happening. A Flood Warning is issued when flooding is imminent or occurring
Flood Advisory	A Flood Advisory is issued when a specific weather event that is forecast to occur may become a nuisance. A Flood Advisory is issued when flooding is not expected to be bad enough to issue a warning. However, it may cause significant inconvenience, and if caution is not exercised, it could lead to situations that may threaten life and/or property.
Flood Watch	A Flood Watch is issued when conditions are favorable for a specific hazardous weather event to occur. A Flood Watch is issued when conditions are favorable for flooding. It does not mean flooding will occur, but it is possible.

[30] National Centers for Environmental Information. "Storm Events Database." ncdc.noaa.gov, April 4, 2024. https://www.ncdc.noaa.gov/stormevents/listevents.jsp?eventType=%28Z%29+Flood&beginDate_mm=12&beginDate_dd=01&beginDate_yyyy=1990&endDate_mm=12&endDate_dd=31&endDate_yyyy=2023&county=POLK%3A153&hailfilter=0.00&tornfilter=0&windfilter=000&sort=DT&submitbutton=Search&statefips=19%2CIOWA.

3.3.16.4 PREVIOUS OCCURRENCES

Since 1953 there have been 12 federal disaster declarations pertaining to flooding in Polk County. Flooding is the hazard most frequently identified across all federal disaster declarations affecting Polk County, and only 6 declarations (2 of which addressed COVID-19) are not related to flooding within the planning area. Additional details of the flood-related disaster declarations are provided in Table 88.

Table 88. FEMA Flood Disaster Declarations that included Polk County 1965- 2024

Disaster Number	Description	Declaration Date Incident Period	Individual Assistance (IA) Public Assistance (PA)
DR-4421	Severe Storms & Flooding	03-23-2019 03-12-2019 – continuing	IA & PA
DR-4386	Severe Storms, Tornadoes, Straight-line Winds, and Flooding	08-20-2018 06-06-2018 to 07-02-2018	PA
DR-1930	Severe Storms, Flooding, & Tornadoes	7-29-2010 6-1-2010 to 8-31-2010	IA & PA
DR-1763	Severe Storms, Tornadoes, & Flooding	5-27-2008 5-25-2008 to 8-13-2008	IA & PA
DR-1518	Severe Storms, Tornadoes, & Flooding	5-25-2004 5-19-2004 to 6-24-2004	IA
DR-1230	Severe Weather, Tornadoes, & Flooding	7-2-1998 6-13-1998 to 7-15-1998	IA & PA
DR-996	Flooding, Severe Storm	7-9-1993 4-13-1993 to 10-1-1993	IA & PA
DR-868	Flooding, Severe Storm	5-26-1990 5-18-1990 to 7-6-1990	IA & PA
DR-443	Flooding, Severe Storm	6-24-1974 6-24-1974	IA & PA
DR-269	Heavy Rains, Flooding	8-14-69 8-14-69	IA & PA
DR-259	Flooding	4-25-1969 4-25-1969 to 4-25-1969	IA & PA
DR-193	Flooding	4-22-1965 4-22-1965 to 4-22-1965	IA & PA

The following descriptions of principle flooding issues and previous flooding events in the planning area were provided by planning committee members.

Unincorporated Polk County

Major flooding occurred on the Des Moines River near Saylorville in June 1954, July 1993, June 2008, and April 1965. Peak crests associated with these events are 24.50 ft, 24.22 ft, 24.03 ft, and 24.02 ft, respectively. Peak crests were taken from the Des Moines River near Saylorville, Iowa stream gauge (USGS Gauge No. 05481650). Significant flooding occurred on Beaver Creek on June 13, 1966 and May 19, 1974 and July 10, 1993 and June 13, 2008. Discharges associated with these events are 5,470 cfs, 7,340, 14,300 cfs, and 7,010 cfs, respectively, at the Beaver Creek near Grimes, Iowa stream gauge (USGS Gauge No. 05481950).

City of Ankeny

Fourmile Creek and its tributaries, Saylor Creek and its tributaries, and tributaries of Rock Creek are all subject to flooding although there no USGS gauging stations in the study area in Ankeny.

City of Clive

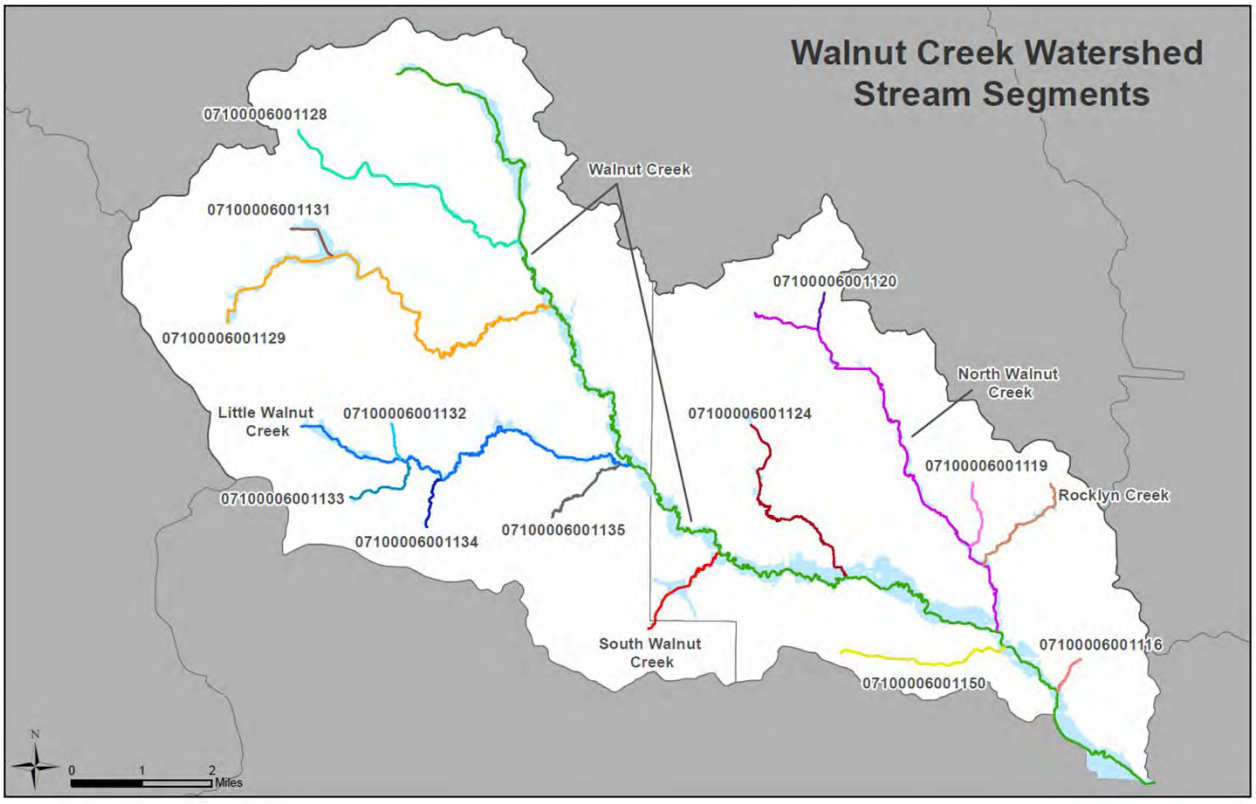
The current Flood Insurance Study (2019) characterizes Walnut Creek as an approximately 18.1 mile stream located within an approximately 84 square mile drainage area. At its confluence with the Raccoon River, the peak discharges have been estimated based on HEC-HMS 3.5 Hydrologic and HEC-RAS 4.1.0 Hydraulic models from 2014:

Table 89. Walnut Creek Watershed Stream Segments

10% Annual Chance	2% Annual Chance	1% Annual Chance	.2% Annual Chance
7,300 cfs	13,450 cfs	17,000 cfs	27,000 cfs

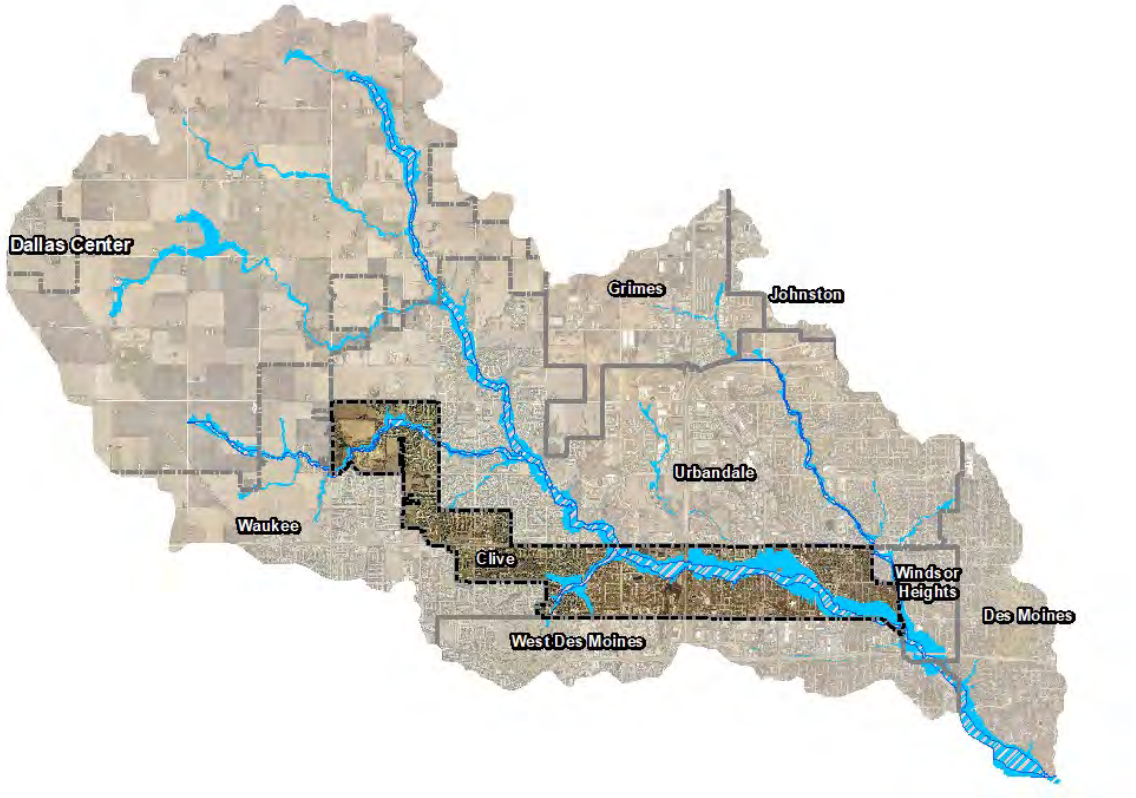
Within the City of Clive, approximately 8 miles of Walnut Creek runs generally through the middle of the community. Additionally, three Walnut Creek tributaries (North Walnut Creek, South Walnut Creek and Little Walnut Creek) are significant water resources within the community.

Figure 89. Walnut Creek Watershed Stream Segments



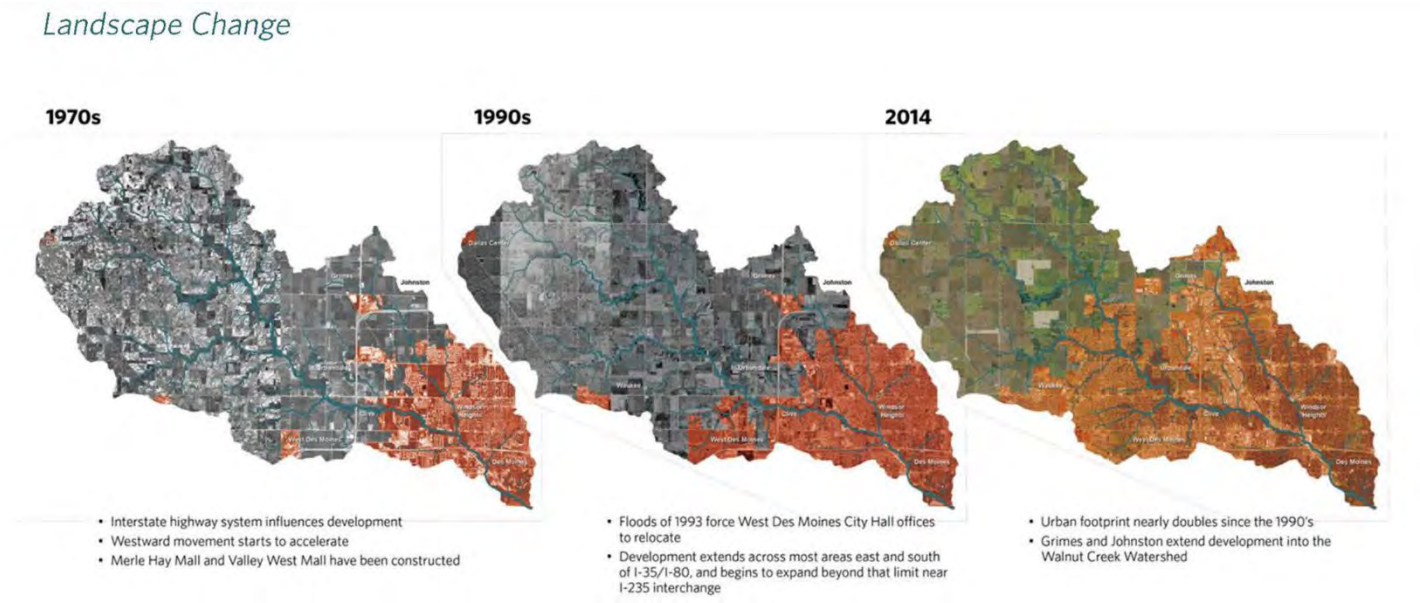
The City of Clive is solely located within the Walnut Creek Watershed and comprises approximately 10 percent of land area within the watershed. Due to its relative position within the watershed, over 90% of the watershed drains through Clive.

Figure 90. Location of Clive within Walnut Creek Watershed



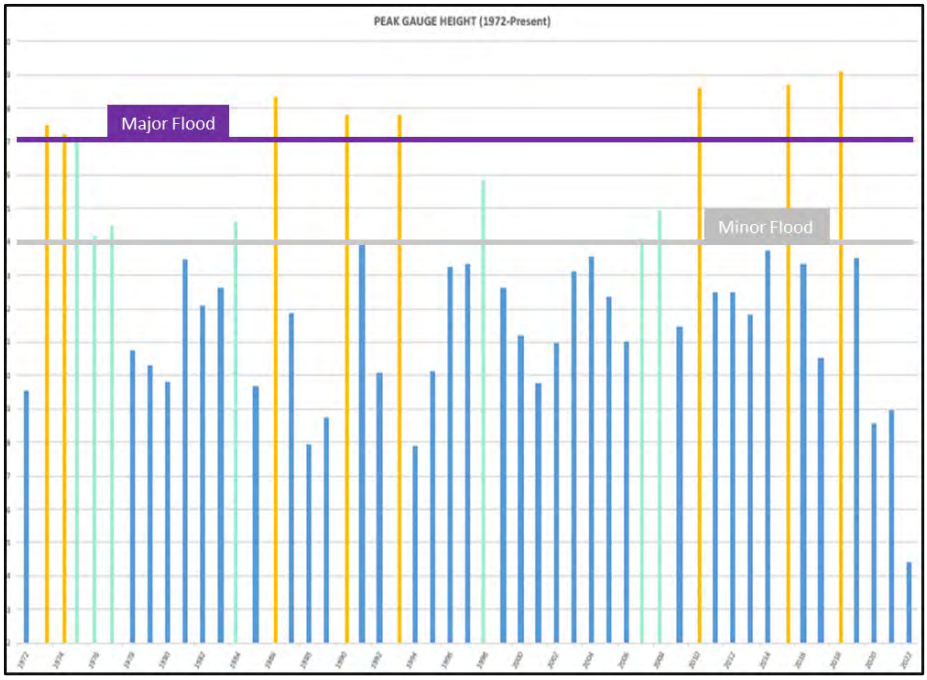
The watershed is comprised of a range of land uses including agriculture, residential and commercial/industrial development. Presently, the watershed is approximately 50% agricultural land use, although the percentage is rapidly changing as the suburban communities continue to growth. For the last 40+ years, the communities have converted agricultural land to suburban landscape at a rate of approximately 400 acres per year. With the continued regional population growth expected and the readily available infrastructure to support growth, it is assumed that the rate of development in the watershed will likely continue which will result in the land use composition within the watershed to be approximately 75% suburban/25% agricultural by 2050.

Figure 91. Walnut Creek Watershed Landscape Changes 1970s - 2014



The City of Clive has had to deal with flooding along Walnut Creek and its tributaries since the community's inception in 1956. Early flood records indicate significant flooding events occurred along Walnut Creek in 1958, 1964, 1973 and 1986. The 1973 flood was identified as the greatest of the known floods at the time although the 1986 peak (12,500 cfs) has been suggested by local observers to have be as impactful as the 1973 flood.

Figure 92. Walnut Creek Flood Gauge Data 1972 - Present



Since the establishment of the USGS gauge at 63rd Street in 1973, the City of Clive has experienced a flood event more than a dozen times, including the last significant flood event in 2018 which caused over $1.5 million in private property damage. During this period of record, Walnut Creek flooding events have generally occurred in late summer and have manifested following a period of generally higher precipitation. Once the watershed has reached general saturation, high intensity storms have produced sudden flooding with less than 6-hour warning from headwater flows reaching the vulnerable portions of the City (University Boulevard neighborhood area). Typically, flood waters have peaked in 9,000-12,500 cfs range which produces 1-3 foot flood inundation levels in those vulnerable areas. Provided that the Raccoon River is not simultaneously high, flood waters on Walnut Creek typically receded within 12 hours. Inundation levels in the University Boulevard neighborhood area are expected to exceed 7-feet in the event of a 100-year flood event.

Based on the Silver Jackets Walnut Creek Watershed Mitigation Benefits Estimator analysis (2019), there are approximately 787 insurable structures located in the Walnut Creek Watershed floodplain. From the City's 2023 Flood Insurance Assessment report, within the City of Clive there are an estimated 256 insurable structures (152 residential and 104 non-residential) located within the floodplain with an estimated value of nearly $125 million or approximately 10% of the City's tax base. Approximately 1/3 of insurable structures are located in the University Boulevard Repetitive Loss area. Most the of the remaining insurable structures are located in the Indian Hills Repetitive Loss area.

The University Boulevard Repetitive Loss area has been of specific concern since the 2018 flood which caused significant private property damage and impacted life safety conditions for dozens of residents who were sleeping at the time of the event. Following the flood event, the City Council allocated funding to initiate a flood buyout program. Utilizing both local funding and Hazard Mitigation Grant Program funding, the City has complete the acquisition and demolition of 21 structures in the University Boulevard neighborhood. As funding becomes available, an additional 34 structures are anticipated to be acquired. The City intends for the buyout area to be converted to natural floodplain open space and incorporated into the adjacent Greenbelt Park.

Figure 93. University Boulevard Repetitive Loss Area- Acquisition Strategy

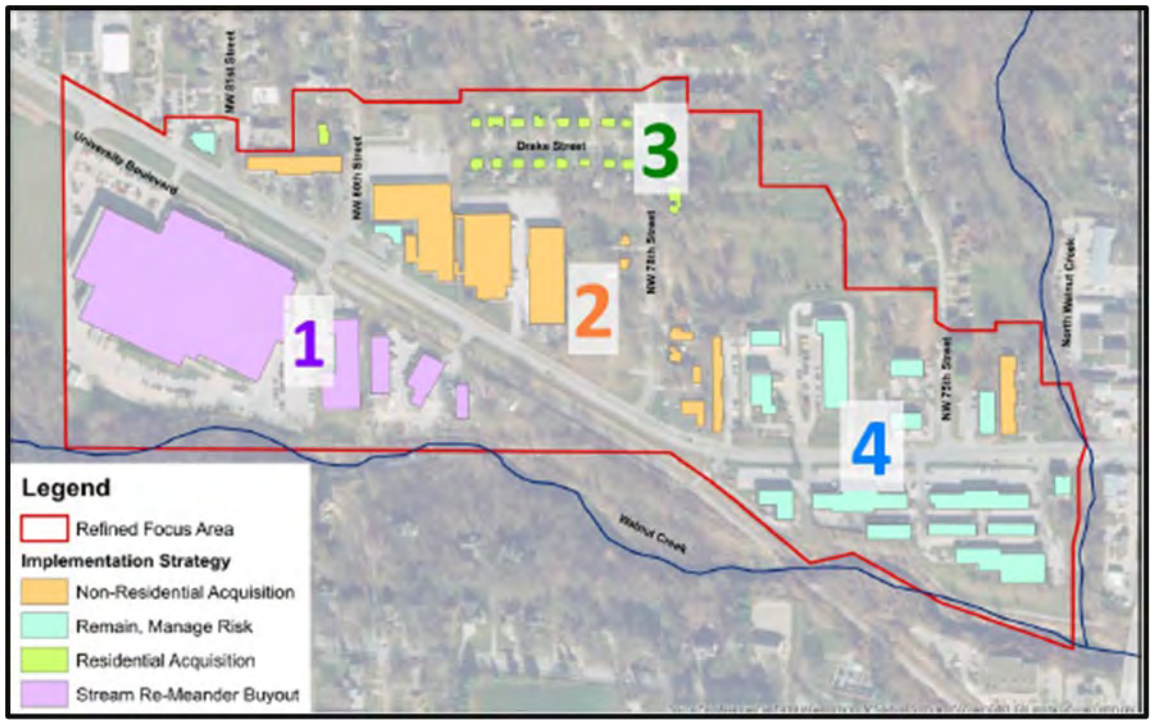
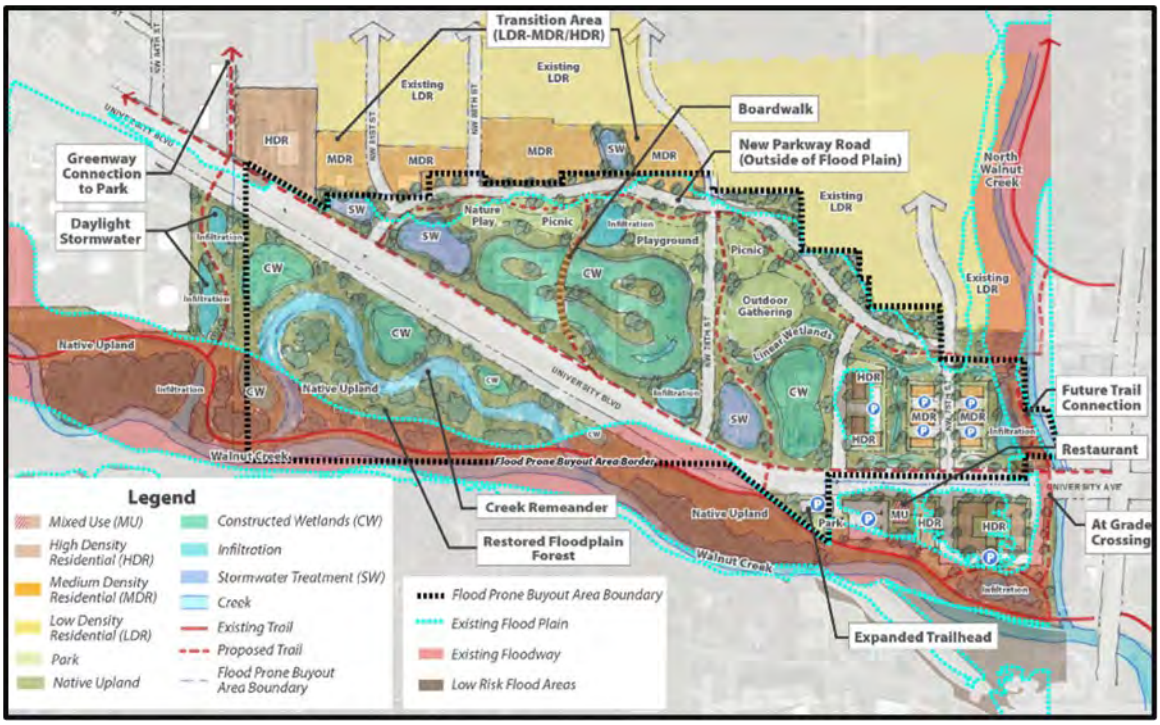


Figure 94. University Boulevard Repetitive Loss Area- Future Natural Floodplain Open Space Concept



To this point, the property owners in the Indian Hills Repetitive Loss area are generally concerned with flood insurance costs rather than the impacts of flooding as the typical flooding event experienced has not resulted in wide-spread impact in this neighborhood. Many of the homes built in the late 1970's and early 1980's were permitted to be constructed within the floodplain through a FEMA granted basement floodproofing exemption. At the time of construction, the homes were built with reinforced concrete basement walls protecting the structures to the then 100-year base flood elevation plus one foot level. Based on the current FEMA Flood Insurance Rate Map, many of those originally protected homes now have the potential to be inundated. As funding becomes available, the City anticipates the need for undertaking a specific flood mitigation planning process for this neighborhood in order to fully assess the risks and develop appropriate mitigation strategies for the long-term resiliency of the neighborhood.

Over the last several decades, the risks associated with flooding has continued to increase due to both natural and man-made changes. In 2019, the City of Clive, in partnership with FEMA and ACE through the Silver Jackets program, evaluated the potential impacts on the watershed from continued development as well as changing climate conditions. The Walnut Creek Watershed Mitigation Benefits Estimator Report identified that base flood elevations within the watershed should be anticipated to increase as development and climate change is experienced. Specifically, the analysis concluded that the increase in base flood elevations could result in approximately 300 additional structures could be at-risk. The total estimated annualized risk was calculated at approximately $6 million dollars per year (1,098 existing insurable structures within the watershed).

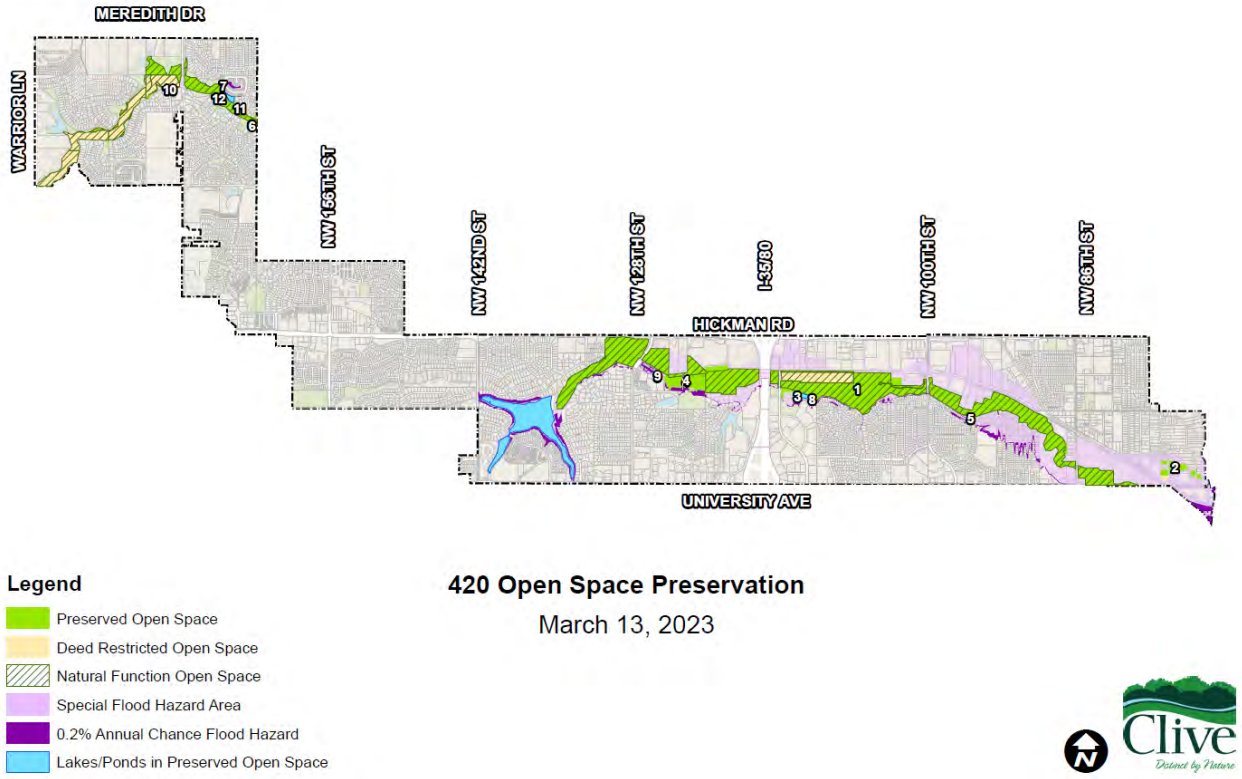
Figure 95. Walnut Creek Watershed Mitigation Benefits Estimator Report Findings

Metric	FEMA Existing Conditions MBE Result	USACE Existing Conditions MBE Result	USACE Future Conditions MBE Result
Total Number of Structures Analyzed by MBE	13,079	13,079	13,079
Total Estimated Number of Structures at Risk (Structure or Content Damage > $0; Properties with Value > $100; Building Footprints > 10 square feet)	787 (6-percent of the total structures analyzed)	1,070 (8-percent of the total structures analyzed)	1,098 (8-percent of the total structures analyzed)
Total Estimated Annualized Risk (Total Estimated Damage Annualized)	$4.5 million	$10.2 million	$11.6 million
Total Estimated Mitigation Cost Need (Elevation) (MBR ≥ 1.0)	$10.6 million	$27.8 million	$32.2 million
Total Estimated Mitigation Benefits (Elevation) (MBR ≥ 1.0)	$41.1 million	$103.8 million	$122.1 million
Total Estimated Mitigation Cost Need (Acquisition) (MBR ≥ 1.0)	$20.4 million	$34.6 million	$38.7 million
Total Estimated Mitigation Benefits (Acquisition) (MBR ≥ 1.0)	$34.4 million	$80.4 million	$96.8 million
Total Estimated Mitigation Cost Need (Basement In-Fill) (MBR ≥ 1.0)	$0.2 million	$0.6 million	$0.8 million
Total Estimated Mitigation Benefits (Basement In-Fill) (MBR ≥ 1.0)	$0.3 million	$1.0 million	$1.5 million

The resulting analysis of the future conditions has directly influenced the City's strategic planning for ensuring that the community is positively positioned to manage, respond and recover from Walnut Creek flooding.

Currently, the City of Clive owns nearly 50% of the floodplain ground within the community. Consistent with the City's Comprehensive Plan, it is anticipated that additional floodplain property will be acquired as it becomes available and incorporated into the Greenbelt Park. Acquisition of the floodplain and reserving the open space for natural floodplain function prevents the accumulation of additional at-risk structures while also aiding in the reduction of future flooding events through the maximization of flood conveyance.

Figure 96. Clive Open Space Preservation Map



In addition to the acquisition of floodplain property, the City of Clive has been active in the increase in the floodplain storage capacity of the land consistent with the vision established in the City's Greenbelt and Natural Resources Master Plan. Numerous stream channel (stabilization improvements and natural channel design reconstruction), constructed wetlands, ox-bow wetland excavations, and vegetation management projects have been completed within the Greenbelt Park. The multi-beneficial projects leverage floodplain management, water quality improvement, natural resource enhance and quality of life improvements to further the City's brand- Distinct by Nature.

Although the City has been active in both floodplain acquisition and flood buyouts, it is anticipated that there will continue to be approximately 200 insurable buildings at-risk in the Walnut

Creek floodplain well into the future. As those risks remain, the City of Clive will continue to be active in working in both upstream and downstream areas of the watershed in search of opportunities to partner in the creation of cost benefitted flood risk reduction mitigation efforts.

Consistent with the Walnut Creek Watershed Master Plan and the City's Water Resources Master Plan, the City will continue to investigate opportunities to increase on-site stormwater management and regionally scaled stormwater storage options for helping to buffer the anticipated future flood impacts. Enhanced stormwater management regulation, addressing both water quality and quantity, should also continue to be evolved even in light of the recent legislative preemption at the State level.

Evaluating the need for enhanced Floodplain Development and Building Code regulations are also a natural response to the anticipated future flood conditions. Considerations for higher regulatory standards, including increased freeboard requirements, "no net impact" floodplain filling requirements and cumulative substantial damage provisions, will be part of the City's review process moving forward. It will be important for the City to fully understand the potential impacts of the higher standards as well as the benefits. This more detailed assessment should be coupled with a robust public outreach effort.

As flood risks will remain a part of the community, early warning, flood response/operations and recovery will also continue to be a critical component of the City's flood mitigation efforts. Advancing the predictive nature of the existing flood alert early warning system should be a high priority. Deepening the warning system partnership through increased regionalization may allow for the development of a more advanced system which could aid in providing more warning/preparation time in advance of a flood event. Similarly, continual improvement of the City's Flood Response and Recovery plan will be vitally important as flood risks continue into the future. Incorporation of the future conditions data (including buildings and vulnerable populations), available advanced 2D H&H modeling mapping and further investigation of pluvial flood impacts associated with the City's storm sewer system are recommended improvement opportunities.

Continual property owner education and outreach will be necessary due to the transient nature of the business/home occupants and the expanding flood risks. Although the City allocates substantial resources to public outreach through its CRS program (including Informational handouts at City Hall, general outreach on water bills/newsletters/social media and targeted outreach projects such as the annually mailed Be Flood Ready Brochure), the program could be enhanced through the development of a specific Program for Public Information program. The committee structure for a PPI would aid in the coordination of the design of a holistic flood protection public education program that could enhance property owner knowledge of flood risks on their property, opportunities for flood risk reductions through mitigation and management of risks through proper flood insurance coverage.

City of Des Moines

The City of Des Moines has several rivers and streams that traverse the City, including the Des Moines River, Raccoon River, Walnut Creek, Fourmile Creek, and Seventh Ward Ditch. The areas adjacent to these streams frequently sustain substantial flood damages. During the Great Flood of

1993, Polk County suffered more than $152,000,000 in flood damages, mostly in the Des Moines metropolitan area. In addition, Des Moines was without water service for 19 days causing the closure of most of the businesses and industry in the City. More than 3,000 properties were inundated. In 2008, residents and business were evacuated as flows exceeded the 1-percent-annual chance flood estimate. Birdland Levee on the Des Moines River failed and inundated the area behind it.

The Des Moines River has two USGS gauging stations within the City of Des Moines, the Des Moines River at 2nd Avenue (Gauge No. 05482000) and the Des Moines River below Raccoon River (Gauge No. 05485500). Significant floods occurred at the 2nd Avenue gauge in 1954 and 2008. The gauge was not in service between 1961 and 1997. The peak flows at the gauge on the Des Moines River below Raccoon River occurred in June 1947, April 1960, July 1993, and June 2008.

The Raccoon River and Walnut Creek inflicted flood damages on the City of Des Moines in the floods of 1973. Even though the flooding on the two streams resulted from the same storm system, the Walnut Creek flood crested on July 1, whereas, flood flows on the Raccoon River were relatively high during the period of July 1 through July 5, with the flood peak occurring on July 4. A USGS gauging station is located on the Raccoon River near Van Meter, Iowa, (Gauge No. 05484500) 15 miles upstream of the City of Des Moines. Other flooding events included July 1993, June 1998, and June 2008. A USGS gauging station on Raccoon River at Fleur Street has been in place since 1984. Peak discharges within the period of record occurred in July 1993 and June 2008.

A stream-gauging station on Walnut Creek at the 63rd Street Bridge (USGS Gauge No. 05484650) was established in October 1971. Fragmentary flood peak records prior to 1971 indicate that significant floods occurred in 1947, 1958, and 1964. The greatest of the known floods on Walnut Creek was the flood of July 1, 1973, but the 1947 flood may have been nearly equivalent. The recorded annual flood peaks for 1974 and 1975 were also relatively high and may have been greater than the 1958 and 1964 floods; however, flood peak data are not available at the same locations for direct comparisons. More recently, flood events in 2010 and 2018 significantly impacted the Walnut Creek watershed. The 2010 flood set a new peak gage height of 18.59 ft at this gauge, but the 2018 flood set a new record of 19.09 feet.

Significant floods have occurred on Fourmile Creek in 1947, 1966, 2008, 2010, and most recently 2018. A USGS stream gauge is located at Easton Boulevard on Fourmile Creek (Gauge No. 05485640) since 1972. The 2018 flood event set a new record crest elevation of 17.47 ft, which broke the previous peak in 2010 of 16.14 ft. Significant damage to homes in this watershed resulted in mass buyouts in this watershed and a plan to incorporate the floodplain area into park space.

In many areas of the Seventh Ward Ditch, floodplain development has taken place near the stream channel with little consideration given to the flood potential of the stream. The stream channel itself is small and overgrown with vegetation in many areas, and many culverts are partially or almost completely filled with sediment. These factors, combined with the increasing urbanization of the watershed, have combined to cause increasingly frequent flooding problems.

The Hamilton Drain area along the northern edge of the City is subject to inundation at times of heavy rainfall due primarily to poor drainage. The City of Des Moines has a multi-phased project that is currently ongoing to improve the drainage and flooding of this area.

City of Grimes

Little Beaver Creek and Little Beaver Creek Tributary within the City of Grimes are both subject to flooding. No USGS gauging stations are located in the City, and no high water marks are known to exist on either of these streams in Grimes.

City of Johnston

The City of Johnston is in the Des Moines River basin, which forms the eastern corporate boundary for much of the City. Flooding hazards from the Des Moines River are significantly reduced by Saylorville Dam, a major flood control structure at Johnston. Beaver Creek is another significant drainage way that affects flooding. Beaver Creek travels southeast through generally undeveloped areas in the City, and flows into the Des Moines River just southeast of Johnston. There is little development within the Beaver Creek floodplain. Current use is for municipal parks, private open space, agricultural fields and within the Camp Dodge facility. The majority of the floodplain is woodlands and farmlands. The development within the Des Moines River floodplain is mainly woodlands and parkland along Saylorville Lake.

As a result of the 2008 flood, the City of Johnston reported damages to 41 commercial buildings with varying degrees of flood related damage. Additional damages to infrastructure in Johnston included a lift station, meter pit, trails, trail bridges, roads, and erosion to creek banks. Several roads were closed including NW Beaver Drive, NW Johnston Drive, and NW 62nd Avenue.

In Johnston, the 2010 flood event caused damage to the sanitary sewer main and creek bank erosion.

City of Pleasant Hill

Little Fourmile Creek is subject to flooding hazards although there are no USGS gauging stations near the City. A 1-percent annual chance flood is estimated to have a peak discharge of 5,720 cfs. No high water marks are known to exist on Little Fourmile Creek in the study area.

City of Polk City

As a result of the 2010 flood, the Polk City wastewater treatment plant was threatened with flooding, but was saved as a result of sandbagging efforts.

City of West Des Moines

A USGS gauging station is located on the Raccoon River near Van Meter, Iowa, (Gauge No. 05484500) 15 miles upstream of the City of Des Moines. The gauge has been active since 1915 and indicated that the July 1973 event had a peak flow of 35,600 cfs. Other flooding events included July

1993, June 1998, and June 2008. The peak discharges for these events were 70,100 cfs, 47,400 cfs, and 43,500 cfs, respectively.

A stream gauging station on Walnut Creek at the 63rd Street Bridge was established in October 1917. Fragmentary flood peak records prior to 1971 indicate that significant floods occurred in 1947, 1958, and 1964. The greatest of the known floods on Walnut Creek was the flood of May 10, 1986, but the 1947 flood may have been nearly equivalent. The recorded annual flood peaks for 1974 and 1986 were also relatively high and may have been greater than the 1958 and 1964 floods; however, flood peak data are not available at the same locations for direct comparisons. The 1986 flood peak was 12,500 cfs. Other significant flooding events on Walnut Creek include 1973 and 1993 which was 9,000 cfs and 6,460 cfs, respectively.

Des Moines Water Works

In the July 1993 flooding, the Raccoon River crested at 26.8 feet which is 14.8 feet above flood stage. River water over-topped the water treatment plant's levee and inundated the plant leaving 200,000 customers without water for 19 days. Many businesses shut down for the duration of this water outage. The infrastructure damages were estimated at $11.2 Million; $9.2 Million of the losses were insured. $1.2 Million was provided by federal/state disaster relief flooding. Improvements have since been made to the levee around the water treatment plan, but inundation could occur if flood levels are higher than the increased protection.

The second highest crest on the Raccoon River was 24.66 feet, which is 12.66 feet above flood stage. This occurred in the June 13, 2008 flood. The treatment plant was not inundated, but significant property damage occurred in large part to river bank erosion. The infrastructure damage caused as a result of this event was over $1.4 Million of which $883,000 was insured.

3.3.16.5 PROBABILITY OF FUTURE OCCURRENCE

According to data from the National Climatic Data Center (NCEI), Polk County has experieced 147 flood events since 2000, which is an average of more than 6 events per year. NCEI estimates that these 147 flood events caused approximately $100 million in damages. The frequency of previous flood events, as well as potential increases in rainfall resulting from climate change, indicates that flooding will remain one of the most common hazards in Polk County. Therefore, it is "highly likely" that flooding of various levels will continue to occur in the planning area.

3.3.16.6 VULNERABILITY

Flooding events can have a profound impact on various community lifelines, disrupting the normal functioning of affected areas like the planning area. These lifelines are essential to the health, safety, and well-being of the community, and their quick restoration is crucial for recovery. The primary community lifelines likely to be affected by flooding are shown in the table below.

Table 90. Potential Impacts of River Flooding on Community Lifelines

Lifelines	Impact Type	Description
Water & Wastewater Systems		Flooding can contaminate water supplies and damage water infrastructure, leading to shortages and health hazards. Wastewater treatment facilities may also be overwhelmed or damaged, increasing the risk of waterborne diseases.
Food, Shelter, & Housing	 	Flooding can lead to the displacement of people, necessitating immediate shelter solutions. The disruption in supply chains can affect the availability and distribution of food, especially fresh produce.
Health & Medical		There is a heightened risk of injuries during floods, as well as increased potential for waterborne and vector-borne diseases. Healthcare facilities might be directly affected by floods, impacting their operational capabilities.
Communications		Communication networks may be disrupted, which can hinder the coordination of rescue and relief efforts as well as the dissemination of important information to the public.
Energy		Flooding can cause power outages by damaging electrical infrastructure. Fuel supply may also be disrupted, affecting not just transportation but also heating and power generation.

Lifelines	Impact Type	Description
Safety & Security		Emergency services are crucial during flooding for rescue operations and maintaining public order. Flooding can also increase the risk of accidents and infrastructure failures, such as dam or levee breaches.
Transportation		Floods can damage roads, bridges, and rail lines, severely limiting mobility and access. This disruption impacts not just daily commutes but also the delivery of essential goods and services.

A) People

There are many factors which contribute to a person's overall vulnerability to flooding. One factor is location – individuals who reside in floodplains and flood-prone areas are inherently more exposed to the impacts of flooding. Another factor is age, as the elderly and young children may lack the mobility to evacuate from areas where flooding is anticipated. Mobility may also be a concern for people with physical or mental disabilities. Additionally, socially vulnerable populations such as those living under the poverty line or in unstable housing conditions may be among the most severely impacted by flooding. Socially vulnerable populations may have increased difficulty safely evacuating an area where flooding has occurred or is anticipated, finding temporary shelter/housing, accessing resources available to flood victims, and restoring normalcy to their lives. Concerns about socially vulnerable populations were highlighted by a 2021 study which found that socially vulnerable populations are more likely to reside in 100-year floodplains, in part due to a variety of social and economic factors.[31]

B) Structures

Flooding has the potential to impart widespread damage and destruction across the built environment, and FEMA states that flooding is both the most common and most costly natural disaster type in the U.S.[32] Flooding can inundate entire towns in a matter of just hours or days, and a relatively small volume of water is necessary to cause damage – just one inch of standing water can cause $25,000 in damage. Floodwater can lead to rot and other phenomena which directly jeopardizes the

[31] Tate, Eric, Md Asif Rahman, Christopher T. Emrich, and Christopher C. Sampson. "Flood Exposure and Social Vulnerability in the United States." *Natural Hazards* 106, no. 1 (March 1, 2021): 435–57. https://doi.org/10.1007/s11069-020-04470-2.
[32] Federal Emergency Management Agency. "Story: Myths vs Facts: The True Cost of Flooding." community.fema.gov, January 2022. https://community.fema.gov/story/Myths-vs-Facts:-The-True-Cost-of-Flooding?lang=en_US.%2F%2F.

integrity of structures, and mold and other fungi can develop and create health hazards. In extreme events, floodwaters may be sufficient to wash away entire structures.

Pressure to develop in floodplains and higher-risk areas can grow as populations increase, and this can be particularly poignant when available space is limited. Any future development in floodplains would increase risk in those areas. For those communities that participate in the National Flood Insurance Program, enforcement of the floodplain management regulations is key to ensuring mitigation of future construction in those areas. Additionally, when land use changes from fields or woodlands to roads and parking lots, it loses its ability to absorb rainfall. Such urban development, with significant impervious surface, has been known to increase runoff two to six times over what would occur on natural terrain. If measures are not taken to limit or slow runoff in developing areas, flooding may become more frequent.

C) Systems

Critical infrastructure, including transportation, energy, communications, and water and wastewater systems, are vulnerable to flood damage. Flooding of system components and facilities can damage them and cause them to stop working. Quickly flowing water can erode soil, putting structures at risk. Floodwaters carrying sediment and debris can clog screens and pumps. In mild cases, disruption of critical systems may be caused by automatic activation of procedures meant to protect important components when unusual operating conditions are detected. In more extreme scenarios, critical systems can be physically destroyed or otherwise rendered inoperable, and restoration of normal operations may take weeks.

D) Natural, Historic, and Cultural Resources

Floods can cause significant damage to natural, historic, and cultural resources. It is not uncommon for these resources to be placed in floodplains and along riverbanks where other development is restricted. Such placement can cause these resources to be among the most exposed assets in the area. Additionally, debris generated during a flood can be strewn across riverside parks and create a hazard which may require extensive remediation.

E) Community Activities

Flooding can significantly disrupt community activities in the planning area. Severe flooding can necessitate the cancellation, postponement, or relocation of a variety of community activities. Relocation is likely the preferred option, but this may not be feasible if flooding is extensive -- finding adequate alternative sites for major activities like the Iowa State Fair will pose a serious challenge for community leaders. Other key activities like voting in local/state/federal elections may also be difficult to relocate as a large volume of buildings may be destroyed or rendered unsafe by floodwater.

3.3.16.7 EXISTING DEVELOPMENT

This section will review the potential losses to existing development in Polk County as a result of river flooding. Included in the review are building losses (counts and values), NFIP participation and claims data by jurisdiction, Repetitive Loss (RL) and Severe Repetitive Loss (SRL) data, displaced populations, and impacted critical facilities and infrastructure.

The flood vulnerability and loss estimates for the unincorporated county and the incorporated cities were generated using the FEMA DFIRM data from February 1, 2019 as well as Polk County parcel and building valuation data provided by the Polk County GIS Department. GIS analysis was conducted to determine the number and values of buildings at risk to the 1% annual chance flood. For purposes of this analysis, if any portion of a parcel was within the 1% annual chance floodplain, then all buildings and the total value associated with the parcel were considered at risk to the 1% annual chance flood. Additionally, to determine the population at risk, the number of residential properties at risk was multiplied by the average household size.

Table 91 provides the numbers of buildings per jurisdiction by type that are in the 1% annual chance floodplain for the unincorporated county and cities. Table 92 that follows provides the building exposure values in the floodplain for the unincorporated county and the incorporated cities in the planning area. It is noted that in some cases, the parcel data did not include building value for parcels where buildings occur. Conversely, in some cases, the parcel included a building value and the building data did not include a building count for the parcel. Even with these limitations, the data still provides a fairly accurate representation of those buildings and values at risk to the 1% annual chance flood.

Table 91. Polk County Building Counts in the 1% Annual Chance Floodplain

Jurisdiction	Residential	Commercial	Government	School	Industrial/ Utility	Agricultural	Total
Alleman	1	0	8	0	0	4	13
Altoona	10	1	28	0	0	2	41
Ankeny	72	9	54	0	0	14	149
Bondurant	55	1	28	0	0	6	90
Clive	163	78	115	0	15	0	371
Des Moines	512	95	1,083	1	56	28	1,775
Elkhart	0	0	0	0	0	0	0
Grimes	77	6	39	0	0	2	124
Johnston	41	44	85	0	6	8	184
Mitchellville	0	0	0	0	0	1	1
Pleasant Hill	9	14	46	0	8	2	79
Polk City	3	0	15	0	0	0	18
Runnells	1	0	0	0	0	0	1
Urbandale	48	6	45	0	0	6	105
West Des Moines	108	30	161	1	13	15	328
Windsor Heights	94	12	33	1	2	0	142
Polk County Unincorporated	249	14	873	2	28	445	1,611
Total	**1,443**	**310**	**2,613**	**5**	**128**	**533**	**5,032**

Source: FEMA Map Services Center, Polk County DFIRM 2/1/2019. Parcel data provided by Polk County – GIS, 3/1/2024, building count is estimated at 1 building per parcel identified in the flood hazard area.

Table 92. Polk County Building Values in the 1% Annual Chance Floodplain

Jurisdiction	Residential	Commercial	Government	School	Industrial/Utility	Agricultural	Total
Alleman	$172,400	$0	$0	$0	$0	$637,920	$810,320
Altoona	$1,689,800	$800	$0	$0	$0	$75,900	$1,766,500
Ankeny	$24,045,340	$2,174,810	$0	$0	$0	$149,297	$26,369,447
Bondurant	$14,210,730	$15,600	$0	$0	$0	$245,420	$14,471,750
Clive	$52,819,300	$80,637,600	$0	$0	$18,354,100	$0	$151,811,000
Des Moines	$60,464,240	$50,996,576	$0	$0	$11,991,000	$893,720	$124,345,536
Elkhart	$0	$0	$0	$0	$0	$0	$0
Granger	$0	$0	$0	$0	$0	$449,650	$449,650
Grimes	$10,818,340	$2,189,750	$0	$0	$0	$32,680	$13,040,770
Johnston	$5,520,930	$34,767,400	$0	$0	$800,130	$353,750	$41,442,210
Mitchellville	$0	$0	$0	$0	$0	$131,640	$131,640
Pleasant Hill	$5,725,600	$2,543,800	$0	$0	$530,000	$91,260	$8,890,660
Polk City	$327,070	$0	$0	$0	$0	$0	$327,070
Runnells	$1,900	$0	$0	$0	$0	$0	$1,900
Urbandale	$11,035,600	$7,063,600	$0	$0	$0	$465,990	$18,565,190
West Des Moines	$41,646,040	$12,886,060	$0	$0	$3,437,200	$503,490	$58,472,790
Windsor Heights	$16,061,300	$31,095,300	$0	$0	$0	$0	$47,156,600
Polk County Unincorporated	$67,375,640	$1,262,600	$0	$0	$5,922,700	$30,021,270	$104,582,210
Total	**$311,914,230**	**$225,633,896**	**$0**	**$0**	**$41,035,130**	**$34,051,987**	**$612,635,243**

Source: FEMA Map Services Center, Polk County DFIRM 2/1/2019. Parcel data provided by Polk County – GIS, 3/1/2024, building values provided are the full total value for the parcel which is the sum of the total land value, total building value, and total dwelling value for the Polk County Assessor's parcel values table. Parcel data does not contain values for School, Government, and Utility parcels.

Table 93 provides details on NFIP participation for the communities in the planning area, and Table 94 that follows provides the number of closed losses and total payments for each jurisdiction, where applicable. The claims information is for the period from January 1, 1978 to March 31, 2024.

Table 93. NFIP Participation Among Polk County Communities

Community ID#	Community Name	NFIP Participant (Y/N)	Current Effective Map Date	Regular-Emergency Program Entry Date	CRS Rating (if relevant)
190304	Alleman, City of	N	02/01/2019	N/A	N/A
190546	Altoona, City of	Y	02/01/2019	11/10/1982	N/A
190226	Ankeny, City of	Y	02/01/2019	05/16/1983	N/A
190707	Bondurant, City of	Y	02/01/2019	04/02/1990	N/A
190274	Carlisle, City of	Y	11/16/2018	08/04/1987	N/A
190488	Clive, City of	Y	02/01/2019	11/1/1979	5
190227	Des Moines, City of	Y	02/01/2019	02/04/1981	6
190229	Elkhart, City of	Y	(NSFHA)	09/13/2023	N/A
190104	Granger, City of	Y	12/07/2018	06/01/1987	N/A
190228	Grimes, City of	Y	02/01/2019	11/6/1985	N/A
190745	Johnston, City of	Y	02/01/2019	05/03/1982	N/A
190619	Mitchellville, City of	Y	02/01/2019(M)	01/18/2011	N/A
190631	Norwalk, City of	Y	11/16/2018	11/20/1998	N/A
190489	Pleasant Hill, City of	Y	02/01/2019	10/8/1982	N/A
190933	Polk City, City of	Y	Adopted Polk County FIRM Panel B dated 03/1/1984	11/14/2014	N/A
190901	Polk County (unincorporated)	Y	02/01/2019	03/01/1984	N/A
190800	Runnells, City of	Y	02/01/2019	02/01/2019	N/A
190804	Sheldahl, City of	N	02/01/2019	N/A	N/A
190230	Urbandale, City of	Y	02/01/2019	06/15/1979	7
190231	West Des Moines, City of	Y	02/01/2019	11/1/1979	N/A
190687	Windsor Heights, City of	Y	02/01/2019	06/15/1979	N/A

Source: NFIP Community Status Book, 02/26/2024; http://www.fema.gov/national-flood-insurance-program/national- flood-insurance-program-community-status-book; M= No elevation determined – all Zone A, C, and X: NSFHA = No Special Flood Hazard Area; E=Emergency Program

Table 94. NFIP Claim Statistics as of 3/31/2024

Community Name	Closed Losses	Total Payments
Altoona	1	$2,625
Ankeny	5	$45,053
Berwick	6	$311,482
Bondurant	1	$10,602
Colfax	1	$12,761

Des Moines	51	$1,309,760
Granger	1	$3,442
Grimes	1	$0
Johnston	7	$48,756
Maxwell	8	$160,728
Pleasant Hill	1	$9,799
Runnells	1	$12,282
West Des Moines	8	$80,709
Total	92	$2,007,997

*Community names reflect addresses as shown within the NFIP database. Individual properties may be physically located in a jurisdiction not listed here.

A county-wide map of of the approximate locations of properties with closed flood insurance claims is provided in Figure 97. Figure 98 and Figure 99 show the approximate locations of properties with closed flood insurance claims in and around the cities of Des Moines and Urbandale, respectively. These communities are among the three in Polk County which participate in FEMA's Community Rating System (CRS). The City of Clive also participates in the CRS, but the available flood insurance data did not identify any claims in or near the City of Clive.

Figure 97. Map of Closed Flood Insurance Claims in Polk County

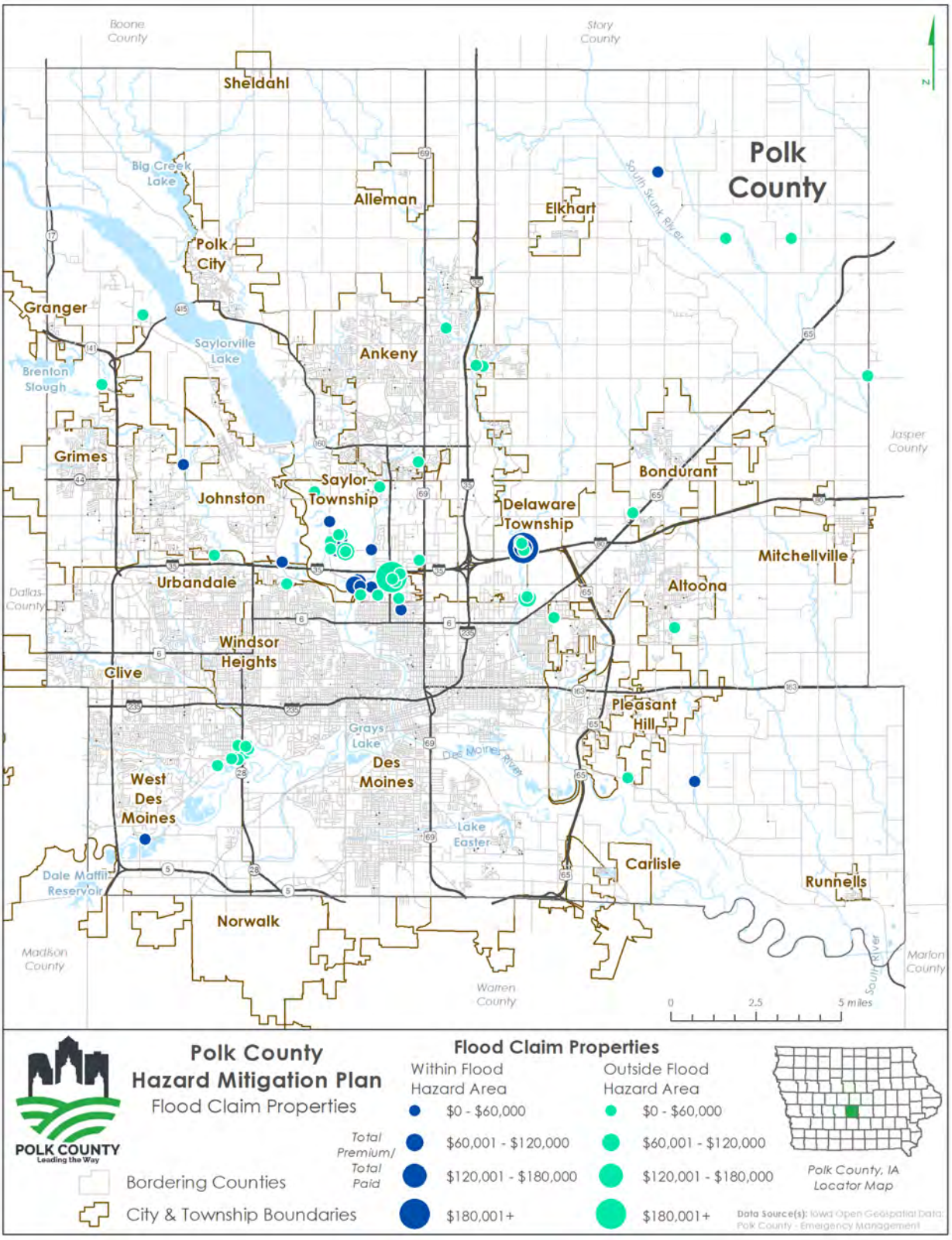


Figure 98. Map of Closed Flood Insurance Claims in and Around Des Moines

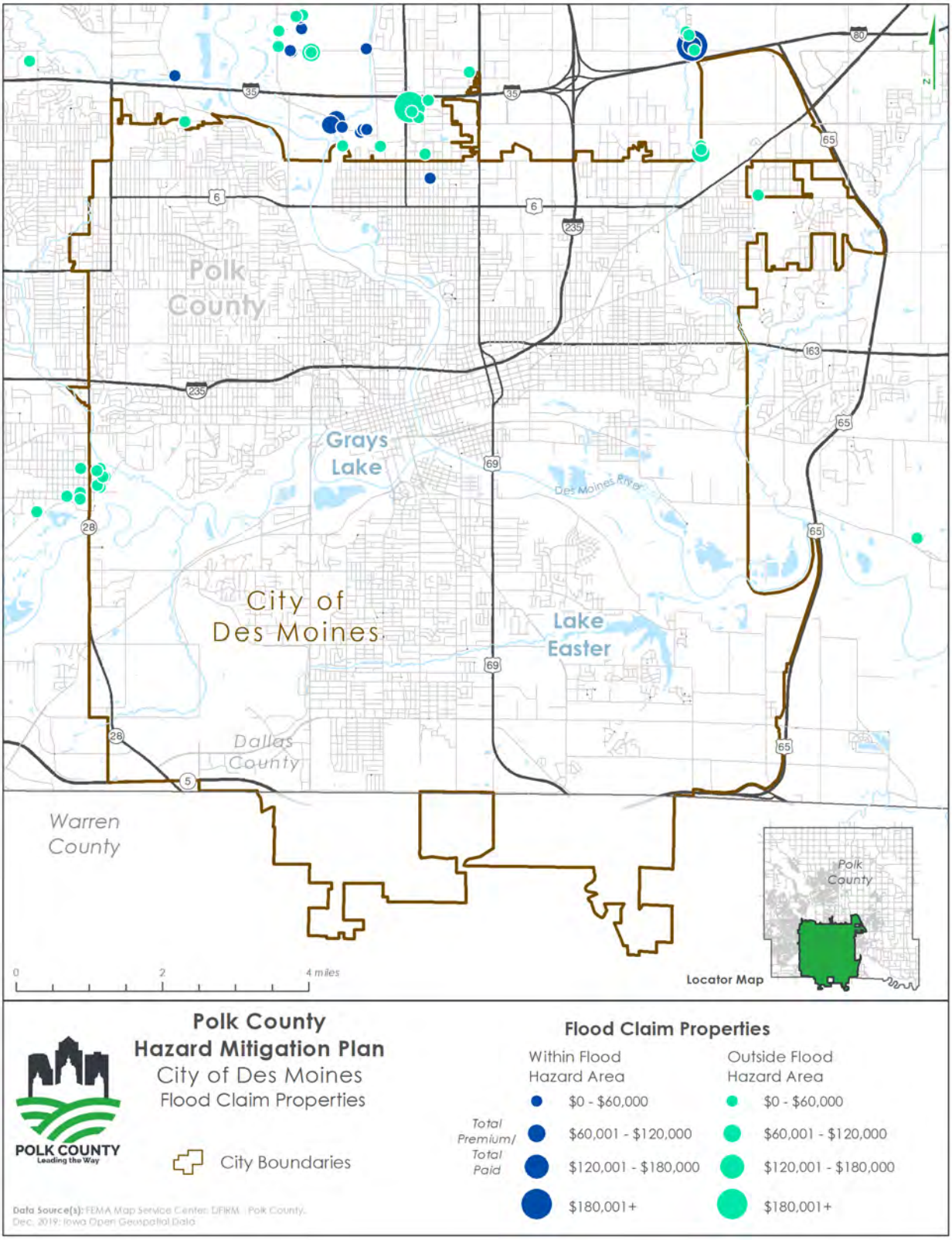
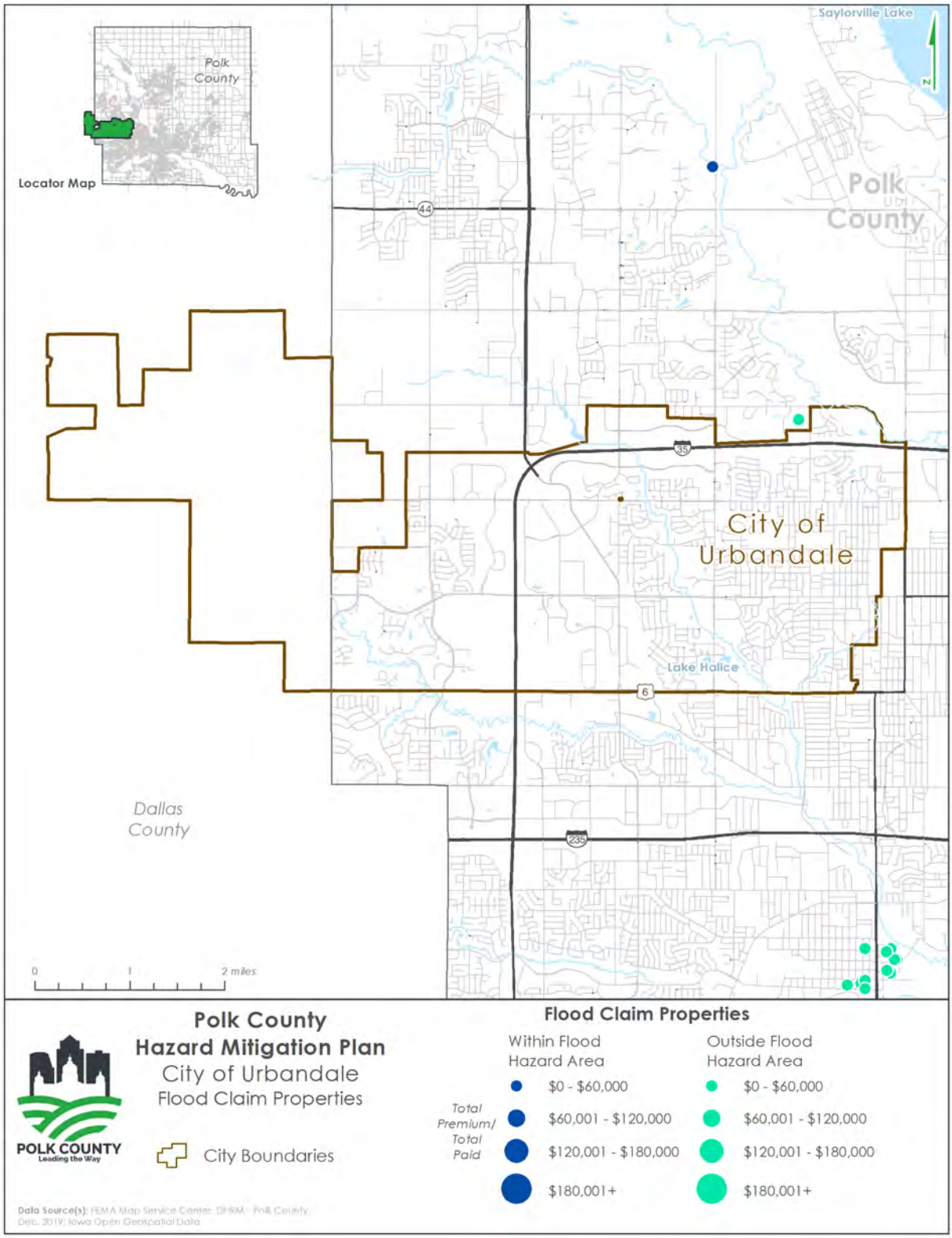


Figure 99. Map of Closed Flood Insurance Claims in and Around Urbandale



According to the available NFIP claims statistics, policy holders in the City of Des Moines have received the most in insurance payments with over $1.3 million in payments.

Repetitive Loss/Severe Repetitive Loss Properties

Repetitive Loss: FEMA defines a Repetitive Loss property as "a structure covered under an NFIP flood insurance police that (1) has incurred flood-related damage on two occasions, in which the cost of repair, on average, equaled or exceeded 25% of the value of the structure at the time of each such flood event; and (2) at the time of the second incident of flood-related damage, the contract for flood insurance contains increased cost of compliance coverage." According to the Flood Insurance Administration, jurisdictions included in the planning area have a combined total of 56 unmitigated repetitive loss properties, as of February 26, 2024.

Severe Repetitive Loss (SRL): A Severe Repetitive Loss property is defined by FEMA as "a structure that is covered under an NFIP flood insurance policy and has incurred flood-related damage (1) for which four or more separate claims have been made under flood insurance coverage, with the amount of each claim (including building and contents payments) exceeding $5,000 and with the cumulative amount of such claims payments exceeding $20,000; or (2) for which at least two separate flood insurance claims payments (building payments only) have been made, with cumulative amount of such claims exceeding the value of the insured structure." There are five Severe Repetitive Loss properties within the planning area as of February 26, 2024. Of these five properties, four are within the jurisdiction of the City of Des Moines and one is within the jurisdiction of the City of Clive.

Table 95 provides a summary of the Repetitive Loss properties and Severe Repetitive Loss properties in the planning area by jurisdiction. Jurisdictions which participate in the NFIP but have no recorded Repetitive Loss or Severe Repetitive Loss properties are not included in the table.

Table 95. Polk County Repetitive and Severe Repetitive Losses

	Repetitive Loss Properties			Severe Repetitive Loss Properties			Total		
	Structures	Losses	Value of Losses	Structures	Losses	Value of Losses	Structures	Losses	Value of Losses
Polk County -- Unincorporated									
Residential	4	9	$361,981	0	0	$0.00	4	9	$361,981
Non-Residential	1	2	$181,000	0	0	$0.00	1	2	$181,000
Total	5	11	$542,981	0	0	$0.00	5	11	$542,981
City of Clive									
Residential	4	10	$133,876	0	0	$0.00	4	10	$133,876
Non-Residential	4	9	$1,388,633	1	4	$1,001,984	5	13	$2,390,617
Total	8	19	$1,522,509	1	4	$1,001,984	9	23	$2,524,493

City of Des Moines									
Residential	23	55	$1,349,788	1	4	$91,754	24	59	$1,441,542
Non-Residential	4	9	$1,274,918	3	37	$2,180,005	7	46	$3,454,923
Total	27	64	$2,624,706	4	41	$2,271,759	31	105	$4,896,465
City of Johnston									
Residential	2	6	$131,519	0	0	$0.00	2	6	$131,519
Non-Residential	0	0	$0.00	0	0	$0.00	0	0	$0.00
Total	2	6	$131,519	0	0	$0.00	2	6	$131,519
City of Pleasant Hill									
Residential	1	2	$24,440	0	0	$0.00	1	2	$24,440
Non-Residential	1	2	$59,411	0	0	$0.00	1	2	$59,411
Total	2	4	$83,851	0	0	$0.00	2	4	$83,851
City of West Des Moines									
Residential	4	8	$67,648	0	0	$0.00	4	8	$67,648
Non-Residential	6	16	$763,811	0	0	$0.00	6	16	$763,811
Total	10	24	$831,459	0	0	$0.00	10	24	$831,459
City of Windsor Heights									
Residential	2	4	$109,575	0	0	$0.00	2	4	$109,575
Non-Residential	0	0	$0.00	0	0	$0.00	0	0	$0.00
Total	2	4	$109,575	0	0	$0.00	2	4	$109,575
County-Wide Totals:									
Residential	40	94	$2,069,251	1	4	$91,754	**41**	**98**	**$2,270,581**
Non-Residential	16	38	$3,667,773	4	41	$3,181,989	**20**	**79**	**$6,849,762**
Total	56	132	$5,846,599	5	45	$3,273,743	**61**	**177**	**$9,120,343**

The following maps illustrate the approximate locations of RL and SRL properties in Polk County, as well as the three Polk County jurisdictions which are currently participating in CRS (Clive, Des Moines, and Urbandale).

Figure 100. Map of RL and SRL Properties in Polk County

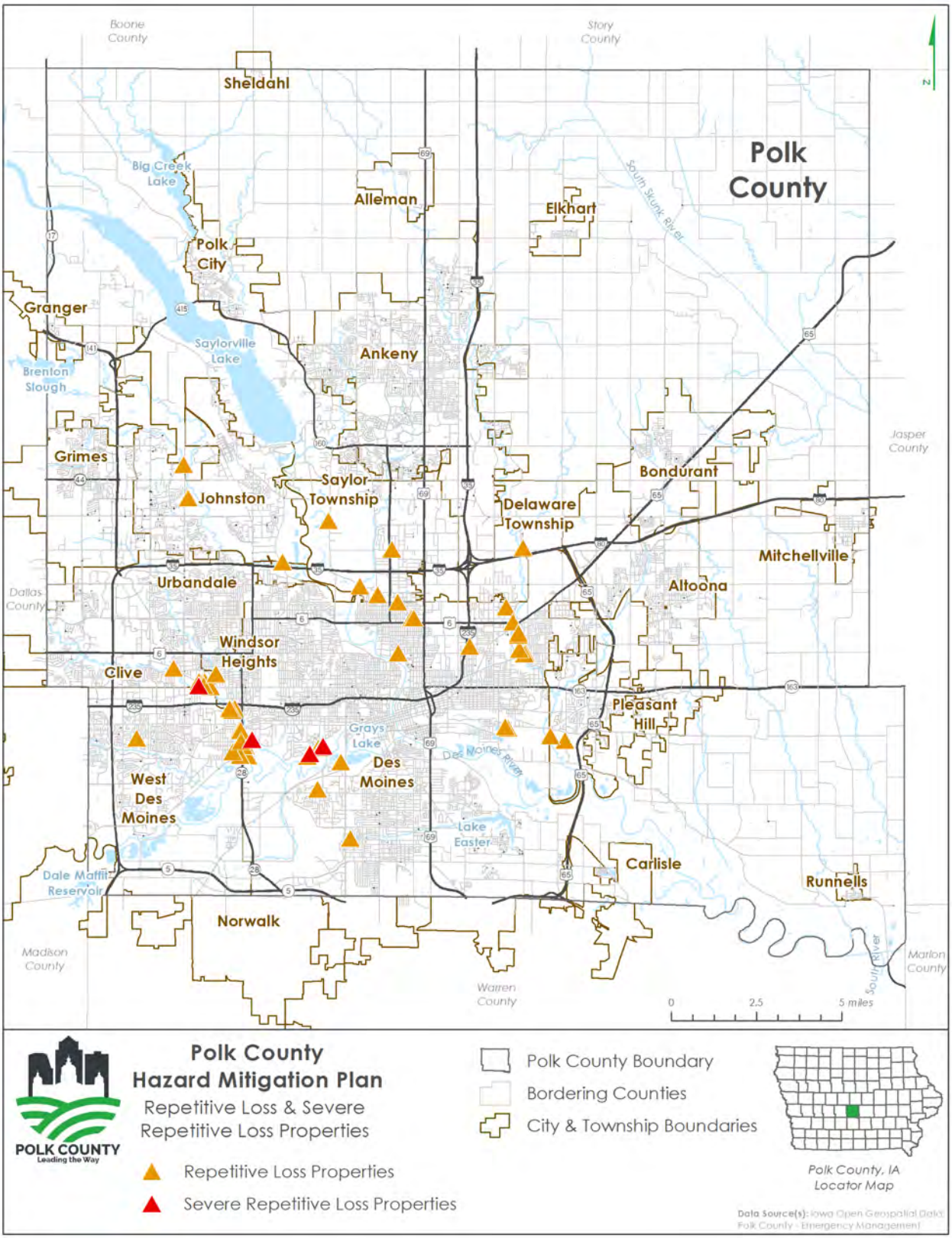


Figure 101. RL and SRL Properties in and Around Clive

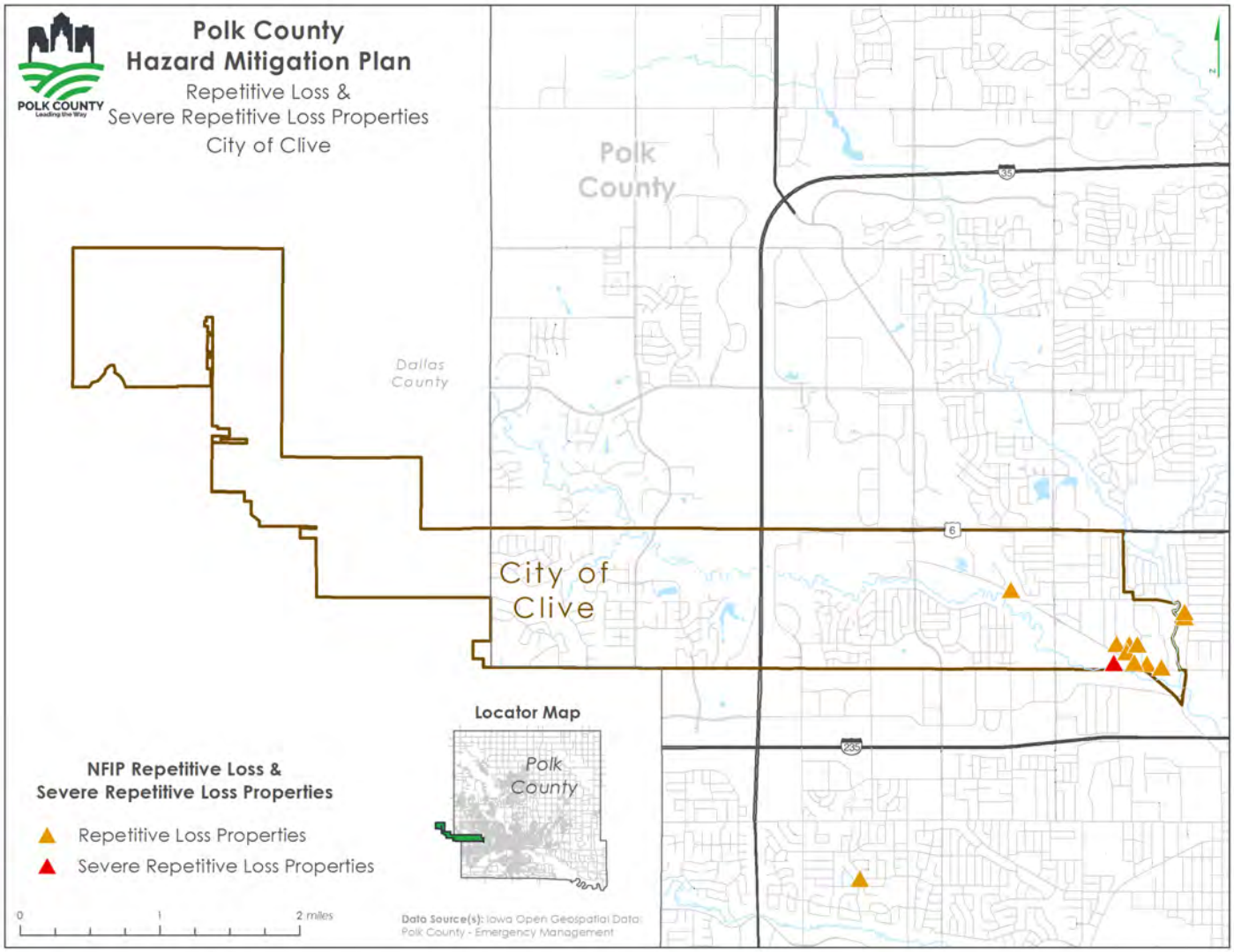


Figure 102. RL and SRL Properties in and Around Des Moines

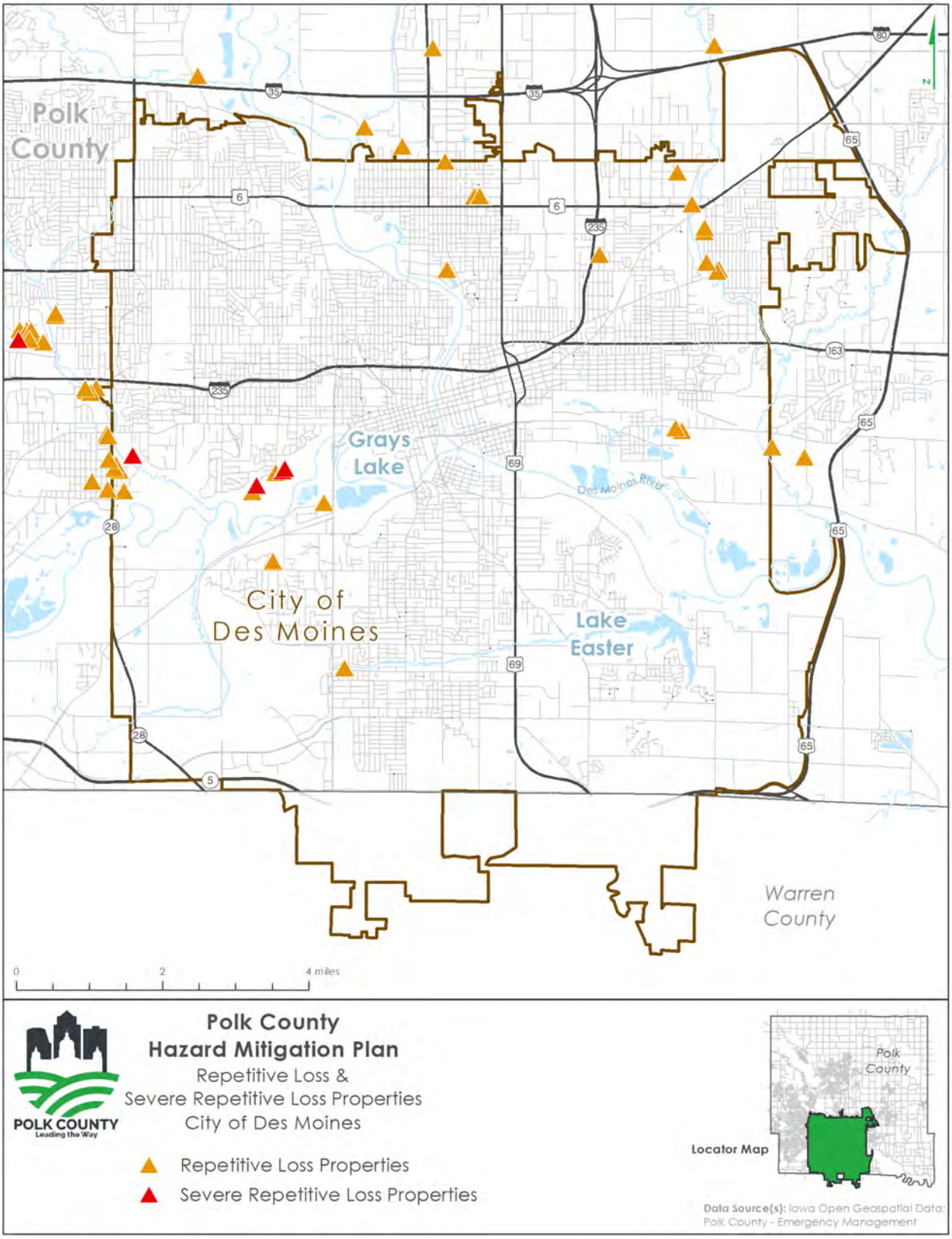
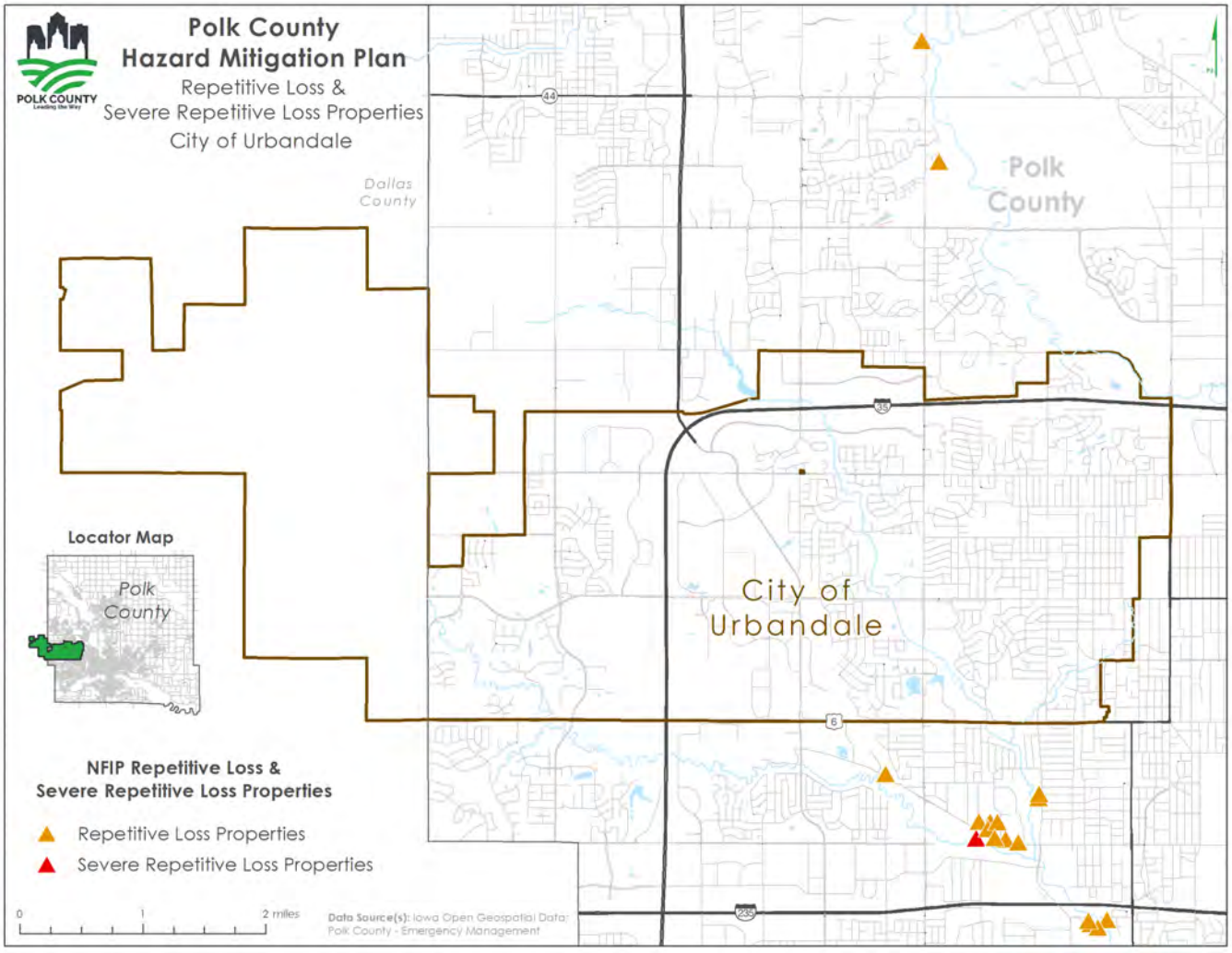


Figure 103. RL and SRL Properties in and Around Urbandale



The result of the exposure analysis summarizes the values at risk in the floodplain. When a flood occurs, seldom does the event cause total destruction of an area. Potential losses from flooding are related to a variety of factors including flood depth, flood velocity, building type and construction. Based on FEMA Flood Insurance Administration (FIA) flood depth-damage curves, the percent of damage is directly related to the flood depth

To determine the population that would be impacted and potentially displaced by a 1% annual chance flood event, the average household size, as determined by the 2010 census, was multiplied by the number of residential structures in the 1% annual chance floodplain for each jurisdiction. The population impacted is somewhat underestimated since some of the residential structures are multi-family structures. However, data was not available to determine the number of households in each multi-family structure.

Table 96 provides the summary of potential flood loss estimates and impacted population for the 1% annual chance flood by jurisdiction.

Table 96. Flood Loss Estimates for 1% Annual Flood Chance

Jurisdiction	Total Building Value at Risk	Number of Residential Parcels	Average household Size	Estimated Impacted Population
Alleman	$2,266,010	7	2.48	17
Altoona	$77,075,970	82	2.64	216
Ankeny	$267,954,660	599	2.55	1,527
Bondurant	$32,777,920	127	3.06	389
Clive	$217,335,690	392	2.67	1,047
Delaware Township	$26,066,270	91	2.51	228
Des Moines	$255,212,630	1,255	2.34	2,937
Grimes	$112,937,780	333	2.68	892
Johnston	$39,300,230	127	2.55	324
Pleasant Hill	$13,307,320	35	2.67	93
Polk City	$8,978,750	18	2.76	50
Runnells	$266,700	3	2.55	8
Saylor Township	$30,625,840	170	2.27	386
Urbandale	$229,999,230	339	2.64	895
West Des Moines	$166,178,340	388	2.31	896
Windsor Heights	$37,160,200	153	2.40	367
Unincorporated Polk Co.	$230,647,930	579	2.44*	1,413
Total	**$1,748,091,470**	**4,698**	**2.44***	**11,463**

*Household size reflects the average for all of Polk County, including incorporated communities. Parcel GIS data and Parcel valuations data table from Polk County – GIS, dated 3/1/2024.

Critical Facilities and Infrastructure at Risk

To analyze critical facilities at risk in the planning area, the planning committee reviewed and updated the inventory of critical and essential facilities and infrastructure in the planning area that was compiled as part of the latest HAZUS risk assessment study. After the critical facilities were validated and revised, a comparison was made with available flood maps to determine those facilities that would be damaged in a 1% annual chance flood event. This analysis revealed 179 critical or essential facilities that are in the 1% annual chance floodplain.

Table 97. Critical Facilities in the 100-Year Floodplain

Facility Type	# in 100-year Floodplain
Parks	3
Communication Tower	2
Electric Power	1
Potable Water	1
Waste Water Treatment Facilities	2
Tier II Chemical Facility (HazMat)	15
Bridges	155
Total	**179**

Future Development

New development in floodplains in Polk County will likely be vulnerable to future instances of flooding. Additionally, the impacts of climate change may expose areas not previously considered vulnerable to flooding. According to FEMA, the NFIP paid $9.4 billion in flood insurance claims between 1980 and 2000. Over the following 20-year period (2000 – 2020) the NFIP paid $62.2 billion in flood insurance claims, and this constitutes an increase of more than 500%.[33] The increase in paid insurance claims by the NFIP may be attributable to some combination of increasing property values, increasing frequency and severity of flooding, and increasing amounts of impervious surface, which can increase runoff over what would occur on natural terrain.

Flooding is among the most significant hazards in terms of the potential to damage existing development. According to FEMA, flooding is the most common and most costly natural disaster in the U.S., and just one inch of water can cause up to $25,000 in damage.[34] The economic consequences of flooding in an urban area can be substantial, with property damage, repair costs, and clean up costs. Buildings submerged in water can begin to rot, and this can jeopardize their structural integrity. Debris which is carried by floodwaters can also cause substancial damage to structures.

Climate Change

There are several ways in which climate change may alter both the frequency and severity of flooding. First, recent data suggests that climate change is increasing the frequency of heavy precipitation events. Secondly, increasing temperatures may lead to earlier snowmelts which can raise water levels ahead of rain which comes in late-spring and early-summer. Thirdly, there are indications that climate change may increase extreme weather events, and this may lead to heavy precipitation shortly after a drought. While it may seem counterintuitive, dried out soil actually is less effective at absorbing water compared to moist or well hydrated soil.[35] Therefore, heavy rainfall on dried out soil increases the likelihood of runoff.

Hazard Risk Score

Table 98. River Flooding Probability and Heath Impact Ratings

Health Severity	Community Impact	Public Health System Impact	Healthcare System Impact	Total Health Hazard Score	Probability
1	3	1	2	7	Highly Likely

[33] FEMA. "Climate Change Increases Risk of Flooding." floodsmart.gov. Accessed March 22, 2024. https://www.floodsmart.gov/climate-change.

[34] FEMA. "Myths vs Facts: The True Cost of Flooding." fema.gov. Accessed March 22, 2024. https://community.fema.gov/PreparednessConnect/s/article/Myths-vs-Facts-The-True-Cost-of-Flooding.

[35] O'Geen, Anthony Toby. "Soil Water Dynamics." *Nature*, 2013. https://www.nature.com/scitable/knowledge/library/soil-water-dynamics-103089121/.

3.3.17 SINKHOLES/LANDSLIDES

3.3.17.1 DESCRIPTION

Sinkholes

Sinkholes are common where the rock below the land surface is limestone, carbonate rock, salt beds, or rocks that can naturally be dissolved by ground water circulating through them. As the rock dissolves, spaces and caverns develop underground. The sudden collapse of the land surface can be dramatic and range in size from broad, regional lowering of the land surface to localized collapse. The primary causes of most subsidence are human activities: underground mining of coal, groundwater or petroleum withdraw, and drainage of organic soils. In addition, sinkholes can develop as a result of subsurface void spaces created over time due to the erosion of subsurface limestone (karst).

Landslides

A landslide is the downhill movement of masses of soil and rock by gravity. They are typically associated with mountainous regions, but they can also occur in areas of low relief. In these areas, the landslides are often the result of cut-and-fill failures (from roadway and building excavations), river bluff failures, lateral spreading, or mine collapse. The basic ingredients for landslides are gravity, susceptible soil or rock, sloping ground, and water. Landslides occur when susceptible rock, earth, or debris moves down a slope under the force of gravity and water. Landslides may be very small or very large, and can move at slow to very high speeds. New landslides can occur because of rainstorms, fires, earthquakes, and various human activities that modify slope and drainage.

3.3.17.2 LOCATION

According to the Iowa Department of Natural Resources, Polk County is considered a low karst area. As a result, erosion of subsurface limestone resulting in sinkholes is not considered very likely. However, Polk County is situated within a portion of the State of Iowa underlain by abundant coal resources. Recorded production totaled over 50 billion tons when in production for over 100 years (1840 to 1947). Beginning in 1902, the state of Iowa required companies to document and map out the underground tunnels and veins for state records. Abandoned mines can contribute to sinkholes if there is inadequate support to hold the weight of development above ground.

According to Iowa Department of Natural Resources, Mines and Minerals Bureau there are 187 documented closed-off underground mining locations in Polk County. These sites are detailed in Table 99. In the city of Runnells, mining began in the 1880s so there are no detailed maps. The City also used to be a final coal stop for steam-paddled boats headed up the Des Moines River so several “mom and pop mines” operated within the community. Any mining activity that occurred prior to 1902 is typically not mapped.

Table 99. List of Underground Mining Locations in Polk County

Mine Name	Acreage	First year of operation	Last year of operation	Data Type	Mining Method	Shaft Depth	No. maps
Acme Coal Co.	0	unknown	1895	Point location, ¼ section	unknown	unknown	0
Acme Coal Mine	38.5	1918	1926	Surveyed map	room and pillar	unknown	1
Adams And Hastie Mine	0	unknown	unknown	Point location, ¼ section	room and pillar	100	0
Altoona Mine	61.5	unknown	unknown	Unmapped, extent approx.	unknown	215	0
American Coal Mining Co.	91.2	1912	1919	Surveyed map	room and pillar	unknown	3
Anderson Coal Co.	34.5	1907	unknown	Unmapped, extent approx.	unknown	285	0
Anderson Mine	0	unknown	unknown	Point location, ¼ section	unknown	unknown	0
Atlas Mine	24	unknown	unknown	Unmapped, extent approx.	unknown	100	0
Avon Coal Co.	0	unknown	unknown	Point location, ¼ section	unknown	34	0
Beck Coal Co. (2nd Vein)	98.4	1908	1942	Surveyed map	room and pillar	unknown	4
Beck Coal Co. (3rd Vein)	24.1	1908	1922	Surveyed map	unknown	unknown	1
Beck Mine	0	unknown	unknown	Point location, w/in section	unknown	unknown	0
Bennett Brothers Coal Co. (3rd Vein)	42.8	1908	1914	Surveyed map	room and pillar	unknown	7
Bennett Brothers Coal Co. Mine No. 1	79.7	1903	1916	Surveyed map	room and pillar	125	2
Bennett Brothers Coal Co. Mine No. 2	120.3	1917	1936	Surveyed map	room and pillar	125	4
Bloomfield Coal Co. Marquisville Mine	410.8	1914	1927	Surveyed map	longwall, room and pillar	271	10
Bloomfield Coal Co. Mine No. 2	100.9	1896	1905	Surveyed map	room and pillar	102	1
Bloomfield Coal Co. Mine No. 6	58.6	1889	1895	Surveyed map	room and pillar	181	4
Blount And Evans Coal Co.	62.2	1908	unknown	Unmapped, extent approx.	unknown	218	0
Blount And Evans Coal Co.	51.2	1908	1913	Surveyed map	room and pillar	135	3
Caleb Johns Mine	0	unknown	unknown	Point location, ¼ section	unknown	unknown	0
Caleb Johns Mine	0	unknown	unknown	Point location, ¼ section	unknown	unknown	0
Camp Creek Coal Co.	0	1887	1894	Point location, w/in section	unknown	40	0
Campfield Coal Co.	21.1	unknown	1895	Unmapped, extent approx.	unknown	118	0
Capital City Coal Co. Mine No. 1	36.1	1930	1936	Surveyed map	room and pillar	unknown	3
Capital Coal Co. Mine No. 1	15.5	1903	1908	Surveyed map	room and pillar	unknown	3
Carbon Mining Co. Mine No. 9	78.5	1929	1941	Surveyed map	room and pillar	212	3

Mine Name	Acreage	First year of operation	Last year of operation	Data Type	Mining Method	Shaft Depth	No. maps
Carbondale Coal Co. Mine No. 1	28.9	1896	1897	Surveyed map	room and pillar	108	2
Center Coal And Mining Co.	78.4	1903	1908	Surveyed map	room and pillar	unknown	1
Central Service Coal Co. Mine No. 6	328.9	1930	1947	Surveyed map	longwall, room and pillar	225	14
Charles Reilley Mine	1	unknown	unknown	Surveyed map	room and pillar	unknown	1
Christy Coal Co. Mine No. 2	200.9	1892	1901	Surveyed map	room and pillar	115	2
Cliffton Heights Coal Co.	54.7	1895	1895	Surveyed map	room and pillar	120	2
Clover Leaf Mine	19	1929	1934	Surveyed map	longwall, room and pillar	unknown	4
Clover Leaf Mine Shaft	0	1911	1913	Point location, ¼ section	unknown	unknown	0
Coal Hill Coal And Mining Co.	46	1901	1901	Surveyed map	room and pillar	45	2
Coaldale Fuel Co.	136.4	1904	1910	Surveyed map	room and pillar	unknown	3
Cooperative Coal Co.	0	1901	1903	Point location, ¼ section	unknown	unknown	0
Cooperative Coal Co. Mine No. 1	0	unknown	unknown	Point location, ¼ section	unknown	125	0
Dahl Mine	0	unknown	unknown	Point location, ¼ section	unknown	unknown	0
Des Moines Coal Co.	0	1865	1873	Point location, ¼ section	unknown	unknown	0
Des Moines Coal Co. Iowa Mine	19.3	1913	1916	Surveyed map	room and pillar	150	1
Des Moines Coal Co. Iowa Mine	222	1913	1916	Surveyed map	room and pillar	150	2
Des Moines Coal Co. Marquisville Mine	457.1	1894	1907	Surveyed map	room and pillar	180	3
Des Moines Coal Co. Mine No. 1	0	unknown	1895	Point location, ¼ section	unknown	105	0
Des Moines Coal Co. Mine No. 4	83.8	1920	1936	Surveyed map	room and pillar	unknown	4
Des Moines Ice And Fuel Co.	66.1	1917	1925	Surveyed map	room and pillar	unknown	2
Diamond Jo Coal Mine	3.9	1901	1928	Surveyed map	room and pillar	unknown	1
Diamond Mine	25.3	unknown	1884	Unmapped, extent approx.	unknown	unknown	0
Eagle Coal Co. Mine No. 2	46.6	1908	1915	Surveyed map	Room and pillar	170	2
Eagle Mine No. 3	88.1	1910	1919	Surveyed map	room and pillar	unknown	2
Eclipse Coal Co.	60.3	1873	1885	Surveyed map	room and pillar	unknown	1
Economy Coal Co.	81.7	unknown	unknown	Surveyed map	unknown	unknown	1

Mine Name	Acreage	First year of operation	Last year of operation	Data Type	Mining Method	Shaft Depth	No. maps
Economy Coal Co. Mine No. 1	205.9	unknown	unknown	Surveyed map	room and pillar	110	2
Economy Coal Co. Mine No. 2	365.6	1924	1935	Surveyed map	room and pillar	unknown	10
Economy Coal Co. Mine No. 3	258.4	1932	1945	Surveyed map	room and pillar	220	3
Elko Coal Co.	36.6	1901	1907	Surveyed map	room and pillar	unknown	1
Enterprise Coal Co. No.3	0	unknown	unknown	Point location, w/in section	unknown	unknown	0
Enterprise Coal Mining Co. Mine No. 1	536.2	1903	1917	Surveyed map	room and pillar	212	1
Enterprise Coal Mining Co. Mine No. 2	503.4	1907	1917	Surveyed map	room and pillar	210	1
Eureka Coal Co. Mine No. 1	130.4	1874	1894	Unmapped, extent approx.	room and pillar	160	0
Eureka Coal Co. Mine No. 2	306.1	1896	unknown	Unmapped, extent approx.	room and pillar	107	0
Evergreen Coal Co.	0.8	1934	1936	Surveyed map	room and pillar	unknown	1
Extra Mine	0	1884	unknown	Point location, ¼ section	unknown	unknown	0
Flint Brick Co. Mine No. 1	37	1894	1901	Surveyed map	room and pillar	122	3
Flint Brick Co. Mine Shafts No. 2 And 3	90.5	unknown	unknown	Surveyed map	room and pillar	180	6
Flint Coal Co. Mine No. 4	86.3	1927	1928	Surveyed map	room and pillar	unknown	4
Flint Valley Mine	0	unknown	unknown	Point location, ¼ section	unknown	unknown	0
Fort Des Moines Mine	108.7	unknown	unknown	Unmapped, extent approx.	room and pillar	unknown	0
Four Mile Coal Co.	86.5	1928	1931	Surveyed map	room and pillar	unknown	6
Fuller And Coggshell Coal Co.	5.2	1882	1885	Surveyed map	room and pillar	unknown	1
Giant Coal Co. Mine No. 1	166.4	unknown	1894	Unmapped, extent approx.	room and pillar	unknown	0
Giant Coal Co. Mine No. 2	54.4	unknown	unknown	Unmapped, extent approx.	unknown	145	0
Giant Coal Co. Mine No. 3	47.6	1885	unknown	Unmapped, extent approx.	unknown	unknown	0
Gibson Coal Co. Mine No. 4	86.4	1903	1909	Surveyed map	room and pillar	190	1
Gibson Coal Co. Mine No.1	66.4	1889	1895	Unmapped, extent approx.	unknown	105	0
Gibson Coal Mining Co. Mine No. 2	42.3	1895	1899	Surveyed map	room and pillar	unknown	2
Gibson Coal Mining Co. Mine No. 5	126.7	1908	1918	Surveyed map	room and pillar	160	2
Gibson Mine No. 3	0	1901	1903	Point location, ¼ section	room and pillar	unknown	0
Glenwood Coal Co. Mine No. 2	61.7	1901	1914	Surveyed map	room and pillar	unknown	1

Mine Name	Acreage	First year of operation	Last year of operation	Data Type	Mining Method	Shaft Depth	No. maps
Glenwood Coal Co. Mine No. 3	0	unknown	unknown	Point location, ¼ section	room and pillar	110	0
Glenwood Mine	10.5	1899	1901	Surveyed map	room and pillar	unknown	1
Gross Coal Mine	1.8	1928	1936	Surveyed map	room and pillar	unknown	3
Hall's Bank	0	1850	unknown	Point location, w/in section	room and pillar	unknown	0
Highland Park Mine	168.2	unknown	unknown	Unmapped, extent approx.	unknown	unknown	0
Hollingsworth Coal Co.	15	1905	1912	Surveyed map	room and pillar	156	5
Hulme Mine	26.7	unknown	unknown	Unmapped, extent approx.	longwall	95	0
Independent Coal Co.	96.4	1927	1945	Surveyed map	room and pillar	60	11
Interurban Coal Co.	17.8	1919	1920	Surveyed map	room and pillar	unknown	1
Iowa Central Mine	0	unknown	unknown	Point location, ¼ section	unknown	unknown	0
Iowa Coal And Mining Co.	127.9	unknown	unknown	Unmapped, extent approx.	unknown	65	0
J. M. Christy Mine	0	unknown	unknown	Point location, ¼ section	unknown	unknown	0
James Kyle Coal Co.	0	1891	1895	Point location, w/in section	unknown	unknown	0
Johns Coal Co.	17.8	1907	1913	Surveyed map	room and pillar	unknown	3
Joplin Coal Company #3	6	1930	1941	Surveyed map	room and pillar	90	1
Keating – Stanford Coal Co.	28.8	1934	1938	Surveyed map	room and pillar	unknown	5
Keystone Coal Co. Mine	193.9	1908	1922	Surveyed map	room and pillar	165	1
Keystone Coal Co. Mine No. 1	40.3	1894	1908	Surveyed map	room and pillar	142	1
Keystone Coal Co. Mine No. 2	49.1	1894	1908	Unmapped, extent approx.	unknown	unknown	0
Kring Coal Co.	1	1937	1943	Surveyed map, poor location	longwall	58	1
Lake Park Mine	0	1895	unknown	Point location, ¼ section	unknown	unknown	0
Levey Coal Co.	2.2	1936	1941	Surveyed map	room and pillar	90	1
Levey Coal Co.	1.8	1941	1941	Surveyed map	longwall	unknown	1
Logan Mine	0	1891	1893	Point location, ¼ section	room and pillar	40	0
M. Quinn Mine	0	1893	unknown	Point location, ¼ section	unknown	unknown	0
Madison Coal Co.	103.9	1908	1916	Surveyed map	room and pillar	165	1
Maple Block Coal Co. Mine No. 1	297.9	1906	1917	Surveyed map	room and pillar	168	2

Mine Name	Acreage	First year of operation	Last year of operation	Data Type	Mining Method	Shaft Depth	No. maps
Maple Block Coal Co. Mine No. 2	48	1905	1922	Surveyed map	room and pillar	unknown	1
Maple Grove Mine Shaft No. 1	23.1	1891	1903	Surveyed map	Room and pillar	105	3
Maple Grove Mine Shaft No. 2	40.8	1891	1903	Surveyed map	room and pillar	105	2
Merchants Mine	0	unknown	unknown	Point location, ¼ section	longwall	unknown	0
Merle Hay Coal Co.	191.2	1942	1947	Surveyed map	room and pillar	200	10
Midland Coal And Mining Co.	0	1891	1896	Point location, ¼ section	unknown	45	0
Midway Coal Co. Shaw Mine	0	unknown	unknown	Point location, ¼ section	unknown	140	0
Miller Mine	15.9	1882	1883	Unmapped, extent approx.	unknown	unknown	0
Moore Coal Co.	3.2	unknown	1926	Surveyed map	longwall	unknown	1
no name	0.7	unknown	unknown	Surveyed map, poor location	unknown	unknown	1
None	7.5	unknown	unknown	Surface	surface	unknown	0
Norris Brothers Coal Co.	0	unknown	unknown	Point location, ¼ section	unknown	unknown	0
Norris Coal Company	1.1	unknown	unknown	Surveyed map	room and pillar	unknown	1
Norwood Coal And Mining Co. No.1	0	1901	1903	Point location, ¼ section	room and pillar	unknown	0
Norwood-White Coal Co. Mine No. 1	321.7	1908	1911	Surveyed map	room and pillar	215	1
Norwood-White Coal Co. Mine No. 2	105.8	1908	1912	Surveyed map	room and pillar	unknown	1
Norwood-White Coal Co. Mine No. 3	292.8	1919	1926	Surveyed map	room and pillar	unknown	1
Norwood-White Coal Co. Mine No. 4	393.2	1911	1918	Surveyed map	room and pillar	170	2
Norwood-White Coal Co. Mine No. 5	186.7	1914	1920	Surveyed map	room and pillar	unknown	1
Norwood-White Coal Co. Mine No. 6	93.7	1919	1924	Surveyed map	room and pillar	unknown	1
Norwood-White Coal Co. Mine No. 8	2.7	1922	1943	Surveyed map	room and pillar	210	1
Norwood-White Coal Co. Mine No. 8	636.3	1922	1943	Surveyed map	room and pillar	210	1
O. K. Coal Co.	9.3	1903	1906	Surveyed map	room and pillar	unknown	1
Old Clover Leaf Mine	3.9	1923	1925	Surveyed map	room and pillar	unknown	1
Pennsylvania Mine	0	1869	1896	Point location, ¼ section	room and pillar	unknown	0
Pioneer Coal Co.	114.8	1876	1896	Surveyed map	room and pillar	150	2
Pioneer Coal Co.	31.8	1940	1941	Surveyed map	room and pillar	100	7
Pittsburg Mine	0	unknown	1885	Point location, ¼ section	unknown	unknown	0

Mine Name	Acreage	First year of operation	Last year of operation	Data Type	Mining Method	Shaft Depth	No. maps
Pleasant Hill Coal Co.	0	unknown	unknown	Point location, ¼ section	unknown	68	0
Polk City Mine	0	1887	1897	Point location, w/in section	unknown	238	0
Preston Coal Co. (Schulz lease)	2.2	unknown	unknown	Surveyed map	room and pillar	unknown	1
Preston Coal Co. (seam 1)	1.5	1926	1929	Surveyed map	room and pillar	unknown	8
Proctor Coal Company	55.7	unknown	unknown	Unmapped, extent approx.	unknown	197	0
Ramsey Mine No. 2	0	unknown	unknown	Point location, ¼ section	unknown	unknown	0
Rawson Mine	24.6	unknown	unknown	Unmapped, extent approx.	unknown	unknown	0
Reese Mine	0	unknown	unknown	Point location, ¼ section	unknown	unknown	0
Rider Cooperative Coal Co.	186	1931	1939	Surveyed map	room and pillar	365	5
Rose Hill Mine	62	1889	1896	Unmapped, extent approx.	unknown	90	0
Runnells Coal Co.	0	1939	1942	Point location, w/in section	room and pillar	20	0
Samuel Dale Mine	0	1889	1893	Point location, ¼ section	unknown	100	0
Saylor Coal Co. Mine No. 2a	884.5	1906	1928	Surveyed map	room and pillar	unknown	1
Saylor Coal Co. Mine No. 2b	54.5	1906	1928	Surveyed map	room and pillar	unknown	1
Scandia Coal Company Mine #4	1470	unknown	unknown	Surveyed map	room and pillar	unknown	30
Scandia Mine #2	510.8	1912	1926	Surveyed map	room and pillar	unknown	1
Scandia Mine No. 2 Second Vein	136.3	1912	1926	Surveyed map	room and pillar	unknown	1
Schell Coal Co.	0	1939	1944	Point location, w/in section	room and pillar	20	0
Scott Mine	0	1908	unknown	Point location, ¼ section	unknown	unknown	0
Shuler Mine (*In Dallas County; affects Grimes and Clive)*	1451	1921	1949	Surveyed map	Room and pillar	387	13
Skandia Mine	0	unknown	unknown	Point location, w/in section	unknown	unknown	0
small unnamed mine	1	unknown	unknown	unknown	unknown	unknown	1
Smith And Lowe Coal Co. Mine No. 2	1.4	1902	1908	Surveyed map	room and pillar	110	1
Smith And Lowe Coal Co. Mine No. 3	18.3	1902	1908	Surveyed map	room and pillar	unknown	2
Smith And Lowe Coal Co. Mine No. 4	0	1903	1905	Point location, ¼ section	room and pillar	unknown	0
South Des Moines Coal Co.	203.7	1912	1922	Surveyed map	longwall, room and pillar	unknown	6
Standard Coal Co.	73.1	unknown	unknown	Unmapped, extent approx.	unknown	unknown	0

Mine Name	Acreage	First year of operation	Last year of operation	Data Type	Mining Method	Shaft Depth	No. maps
Standard Coal Co. Mines	1.3	1933	1936	Surveyed map	room and pillar	unknown	1
Standard Coal Co. Mines	2.2	1929	1933	Surveyed map	room and pillar	unknown	1
Stanford Coal Co. Mine No. 1	15.1	1931	1932	Surveyed map	room and pillar	unknown	3
Star Coal Co.	0	unknown	unknown	Point location, w/in section	unknown	unknown	0
Swanwood Coal Co.	0	1908	1910	Point location, ¼ section	room and pillar	unknown	0
Two Rivers Coal Co.	29.5	unknown	unknown	Unmapped, extent approx.	unknown	unknown	0
Union Mine	18.4	1894	1894	Surveyed map, poor location	room and pillar	unknown	2
Union Mine	0	unknown	unknown	Point location, ¼ section	unknown	unknown	0
Union Mine (3rd Vein)	20.7	1887	1894	Surveyed map, poor location	room and pillar	150	1
University Coal Co.	86.9	unknown	unknown	Unmapped, extent approx.	room and pillar	unknown	0
unnamed	1	unknown	unknown	unknown	unknown	unknown	0
Urbandale Coal Co.	146.4	1920	1942	Surveyed map	room and pillar	180	2
Valley-Union Coal Co.	0.6	1906	1912	Surveyed map	room and pillar	150	3
Van Ginkel Mine (2nd Vein)	57.5	1885	1897	Surveyed map	room and pillar	75	3
W. V. Stoughtenberg Mine	0	1889	1894	Point location, w/in section	unknown	unknown	0
Wabash Mine No. 1	6.8	unknown	unknown	Surveyed map	room and pillar	unknown	1
Wabash Mine No. 2	129.5	1886	unknown	Unmapped, extent approx.	unknown	100	0
Walnut Creek Coal Co.	2	1905	1910	Surveyed map	room and pillar	150	2
Walnut Creek Coal Mine	5.1	1885	1894	Surveyed map	longwall, room and pillar	140	1
Watson Mine	0	1866	1876	Point location, ¼ section	unknown	40	0
West Riverside Coal Co.	52.7	1894	1911	Surveyed map	room and pillar	160	2
Western Coal Co.	1.8	1896	1902	Surveyed map	room and pillar	unknown	1
Western Coal Co. Saylor Mine	587.6	1898	1910	Unmapped, extent approx.	room and pillar	216	1
Wild Rose Mine	18.8	1899	1899	Surveyed map	room and pillar	unknown	1
Woodlawn Mine	0	unknown	unknown	Point location, ¼ section	unknown	unknown	0
Wright Coal Co.	703.4	1910	1924	Surveyed map	room and pillar	unknown	1

Source: Iowa Department of Natural Resources, 2023

All Polk County jurisdictions are considered to be equally vulnerable to landslides. Polk County's topography is relatively flat overall, but all communities in the county have slopes where landslides could potentially occur. The U.S. Geological Survey considers the entirety of Polk County to have moderate susceptibility to landslides, primarily due to the limited presence of shale. Shale is sometimes associated with landslides, but the lack of large, steep slopes has resulted in low incidence of landslides in Polk County. Heavy rainfall, fires, mineral extraction, and other human activity can create instability and increase the likelihood of landslides.

3.3.17.3 EXTENT

Landslides and sinkholes exhibit unique characteristics in terms of size, shape, timing, and location relative to human development, all of which influence the extent of the damage they cause. These geological occurrences can range from subtle shifts in elevation to dramatic, wide openings on the Earth's surface. In urban settings, subsidence and sinkhole events pose a significant risk, potentially causing extensive damage. Key issues include disruptions to utilities and damage to both private and public assets, such as buildings, roads, and underground facilities. Prolonged subsidence or sinkhole development can lead to severe outcomes, including fractured or collapsed building foundations and roadways. Sinkholes also pose environmental risks, particularly to local groundwater systems in carbonate rock formations. These areas are prone to pollution as water can easily permeate from the surface into the subsurface through cavities and fractures, bypassing natural filtration processes.

Landslides can be very small or very large in size, and they can move slowly or very rapidly. There have been numerous small-scale landslide events in Iowa, none resulting in injury or death. The extent of past events has been limited to less than a city block in size and has "run out" over the stretch of less than 100 yards. For both landslides and sinkholes, development near chemical infrastructure – such as pipelines and hazardous material storage facilities – heightens the risk of environmental contamination due to potential breaches and hazardous material releases. Contaminants of concern include sewage, fertilizers, herbicides, pesticides, and industrial chemicals. While abrupt subsidence events can initially damage vegetation, natural regrowth typically occurs over time.

3.3.17.4 PREVIOUS OCCURRENCES

Sinkholes

There is limited documentation of sinkhole occurrences in Polk County. Although there is no County, State, or Federal database of sinkholes, news articles and anecdotal evidence provide some detail about previous occurrences of sinkholes within Polk County. The City of Windsor Heights had a few minor sinkholes open up in 2018. In the City of Des Moines a number of sinkholes have opened up, two of the most recent and notable are below. In the city of Runnells, the Mayor stated that over the last 20 years, multiple sinkholes have appeared in a field on the east side of town where two entrances to mines were located. Notable instances of sinkholes within Polk County are described below.

July 5, 2018 – A sinkhole was found along the Walnut Creek Bike Trail in Windsor Heights.

May 29, 2018 – A 17-foot sinkhole (deep and wide) opened up on Des Moines' south side's 3600 block of Thorton Avenue.

Figure 104. Photo of Sinkhole Near Runnells, July 2010



Source: Des Moines Register

May 30, 2013—Sinkhole in Runnells in a residential front yard was 10 feet deep and 10 feet wide eroded around a power pole. The sinkhole was caused by an old septic tank.

July 28, 2010—Sinkhole on property near Runnells. See Figure 105.

Figure 105. Photo of Sinkhole Near Runnells, July 2010



Source: Photo courtesy of DSC—IDALS

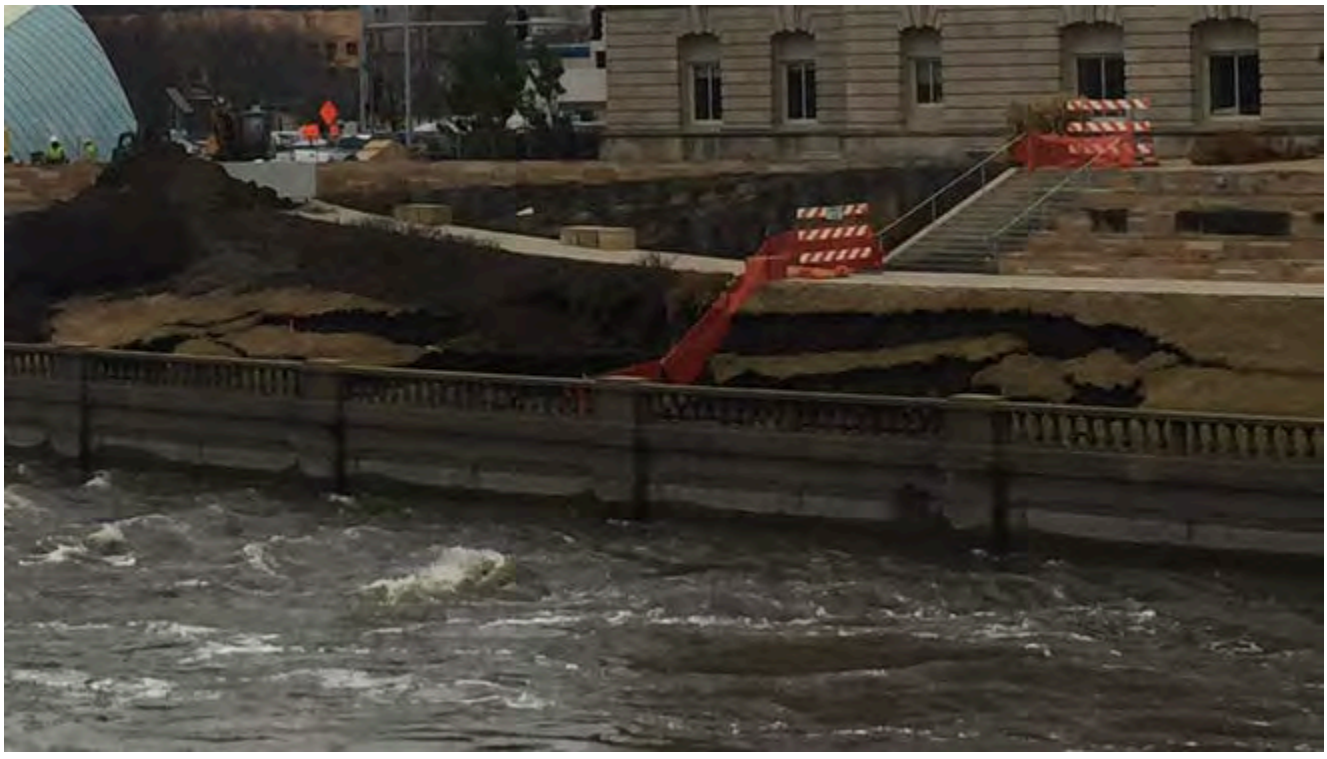
1980s—Sinkhole in east side of Runnells that was 25 feet in diameter, and it caved in a portion of two residential roads. No homes were impacted in the incident.

Landslides

Reporting of landslide events in Iowa is sporadic. No state agency collects and maintains reports of landslides in Iowa. Recently the USGS published and posted an inventory of known landslides, but as stated in the summary of the publication, such "inventories are typically collected and maintained by different agencies and institutions, usually within specific jurisdictional boundaries, and often with varied objectives and information attributes or even in disparate formats." There is only a single documented landslide within the U.S. Landslides Inventory which occurred in Polk County.

According to the USGS, in 2017 a hole in a sewage box in the Des Moines River caused a riverbank to collapse. A spokesperson with the City of Des Moines explained that the constant flow of water over time on the bottom of the box scoured a hole in the sewage box. Once that hole was created, soil filled in the void, and that shift in pressure caused the land erosion.[36]

Figure 106. Landslide along the bank of the Des Moines River 2017



Source: Zachary Boyden-Holmes/The Register

[36] U.S. Geological Survey. "U.S. Landslide Inventory." usgs.maps.arcgis.com, January 22, 2017. https://usgs.maps.arcgis.com/apps/webappviewer/index.html?id=ae120962f459434b8c904b456c82669d.

3.3.17.5 PROBABILITY OF FUTURE OCCURRENCES

Due to the limitations of available data, it is not practical to extrapolate the probability of future landslides from past events. Data on sinkholes is also limited, but news reports indicate that sinkholes occur somewhere in Polk County roughly once every few years. The HMPC determined the probability of future occurrence of sinkholes and landslide in the planning area to be "occassional."

3.3.17.6 VULNERABILITY

Sinkholes and landslides – often triggered by factors like heavy rainfall, earthquakes, or human activities – can have a significant impact on various community lifelines. The primary community lifelines likely to be affected by landslides are shown in the table below.

Table 100. Potential Impacts of Sinkholes/Landslides on Community Lifelines

Lifelines	Impact Type	Description
Food, Shelter, & Housing		Landslides and sinkholes can destroy or damage homes and buildings, leading to displacement of residents and the need for temporary housing solutions. The rebuilding process can be extensive and resource intensive.
Health & Medical		The immediate threat of injury during a landslide or sinkhole, as well as the potential for public health concerns afterward (due to disrupted water and sanitation systems), can increase the demand for medical services and strain healthcare facilities.
Utilities		Landslides and sinkholes can damage utility lines and infrastructure, leading to power outages, water supply disruptions, and communication breakdowns. Restoring these services is crucial for recovery and normalcy.
Transportation		Landslides and sinkholes can block roads and railways, disrupting transportation and access, including emergency response routes. Repairing these routes can be time-consuming and costly.

A) People

The vulnerability of people in Polk County to the impacts of landslides and sinkholes is primarily determined by their location. Individuals who reside on or near the bottom of slopes are at the most risk of landslides, while those living on karst terrain or above old mines are more vulnerable to sinkholes. The vulnerability to landslides increases if the slope has been impacted by a fire, heavy rain, or human activity which can make soil more susceptible to sloughing. A person's mobility may also be a factor contributing to their overall vulnerability, but many landslides and sinkholes develop at a rapid pace.

B) Structures

Structures located on or near slopes are the most susceptible to damage from landslides. Likewise, structures built on karst terrain or near old mines are at an increased risk of damage from sinkholes. Lightweight structures are more likely to be damaged and collapse from the lateral forces of moving land and debris. Conversely, heavy structures may be better suited to resist the force of land and debris pushing up against the walls, but these structures can be damaged or destroyed if the ground they are built on begins to move.

C) Systems

Landslides and sinkholes can damage and destroy numerous systems which communities rely upon, including roads and bridges, underground pipelines, power transmission lines, and communications infrastructure. The extent of damage to these systems is primarily determined by the location and magnitude of the event.

D) Natural, Historic, and Cultural Resources

The impact of landslides and sinkholes on historic and cultural resources in Polk County is largely determined by the severity of the event and the characteristics of the historic/cultural resource. The natural environment may be temporarily damaged or altered by a landslide or sinkhole, but the impact of these events on flora and fauna is typically short-lived.

E) Community Activities

Community activities may need to be postponed, cancelled, or relocated if they rely on a structure or site that has been damaged by a landslide.

Existing Development

Due to the lack of information regarding previous occurrences of this hazard, it is not possible to estimate potential losses. However, since Polk County is considered a low karst area according to Iowa Department of Natural Resources, sinkholes are not prevalent from erosion of subsurface limestone, but are possible from the extensive abandoned coal mines to affect existing development. Ruptures along water pipelines may also cause sinkholes by creating voids below the surface of the ground.

Future Development

Future development over abandoned coal mines may increase vulnerability to sinkholes, and future development along slopes may increase vulnerability to landslides. Structures add weight which can make sloughing more likely, and construction and other human activity may reduce the stability of sloped ground.

Climate Change

Climate change is not anticipated to have a noticeable impact on sinkhole occurrences in the planning area. Landslides may become more frequent as climate change appears to be increasing the overall precipitation in the planning area, and the added weight of water on a slope may exceed the strength of the earth materials that compose the slope.

Hazard Risk Score

Table 101. Sinkholes/Landslides Probability and Health Impact Ratings

Health Severity	Community Impact	Public Health System Impact	Healthcare System Impact	Total Health Hazard Score	Probability
0	0	0	2	2	Occasional

3.3.18 STRUCTURAL FIRE

3.3.18.1 DESCRIPTION

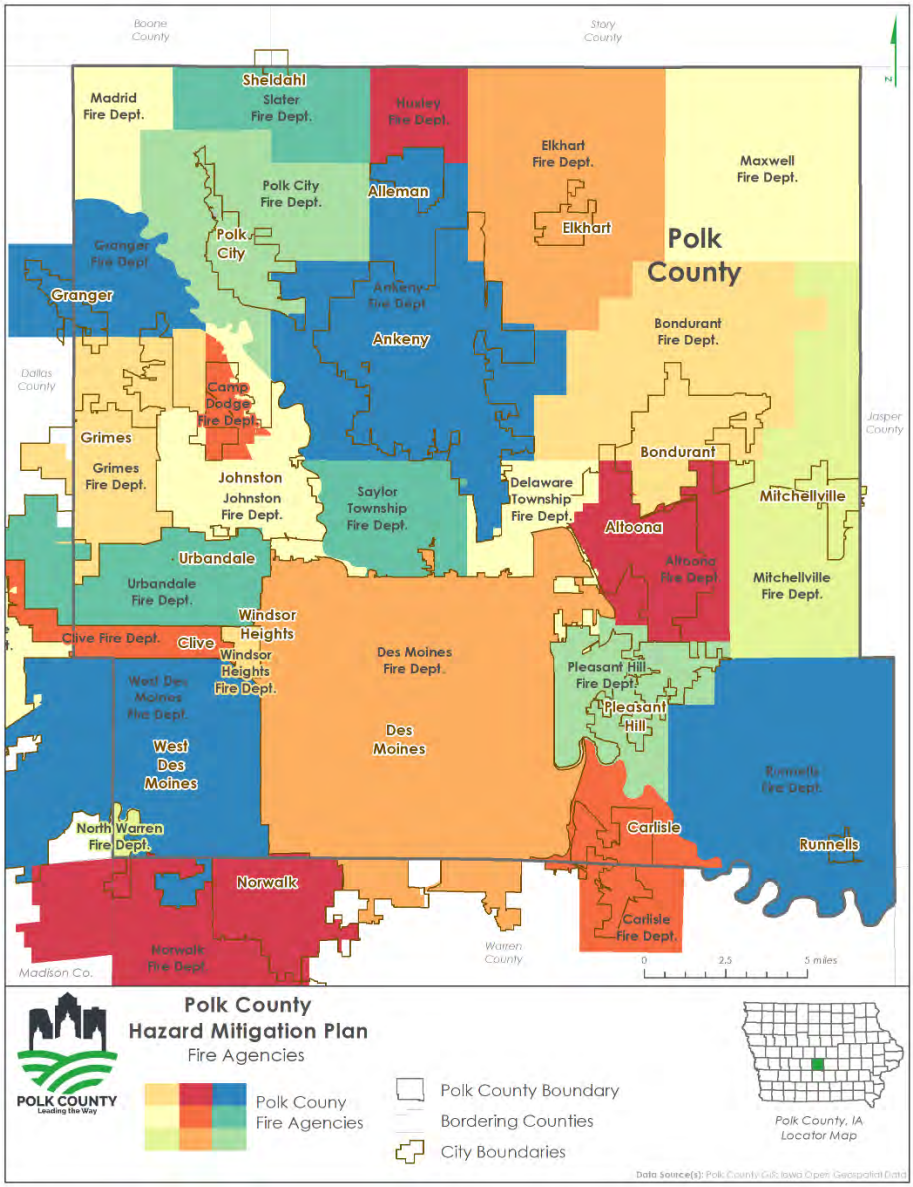
A structural or urban fire is an uncontrolled fire in populated area that threatens life and property and is beyond normal day-to-day response capabilities. Historically, structural fires which spread to nearby buildings caused several catostrophic urban fires in the 1800s. Today, modern fire codes and fire suppression requirements in new construction and building renovations, coupled with improved firefighting equipment, training, and techniques, lessen the chance and impact of a major urban fire. However, structural fires still pose a challenge to communities, and fires in large structures like apartments, hotels, and offices can quickly threaten hundreds of lives.

3.3.18.2 LOCATION

All Fire Departments respond to structural fires on a regular basis. Structural fires are inherently more likely in places with more structures – the urban core of the Des Moines Metropolitan area will experience more frequent structural fires than the northern and eastern portions of the county which largely consist of agricultural land. Urban fires most frequently occur in residential structures, and the age and density of a particular neighborhood can make it more vulnerable to fire due to the increased possibility of fire spreading amongst neighboring structures. Structures in areas served by older, smaller, or otherwise inadequate water distribution infrastructure are also at significant risk. Broadly, all jurisdictions in Polk County have structures which can ignite; therefore, these jurisdictions are

considered equally vulnerable to this hazard. The figure below shows the jurisdictional boundaries of the fire agencies serving Polk County.

Figure 107. Polk County Fire Agencies Map



3.3.18.3 EXTENT

Structural fires in urban settings can vary significantly in their effects, which can range from minor smoke or water-related issues to the complete destruction of homes, businesses, and public spaces. In extreme cases, these fires can spread to additional structures and damage a significant portion of building stock. Structural fires can result in injuries and fatalities, and residents may be displaced for an extended period of time.

Nationally, fires caused over 3,790 civilian fire deaths and 13,250 injuries in 2022. The deaths from residential fires constitute most fire deaths, accounting for 72% of all civilian fire deaths in 2022.[37] Statistically, urban fires are most likely to start because of human actions; in particular, cooking was identified as the cause of nearly 66% of residential fires in 2021.[38] For comparison, electrical malfunctions were identified as the cause of only 9% of residential fires in that same year.[39] Urban fires can also begin as a result of other hazards, such as storms, lightning strikes, drought, transportation accidents, hazardous material releases, criminal activity (arson), and terrorism.

Residential fires, given their timing and the materials often found in homes, pose a higher risk of fatalities compared to commercial or industrial fires. Most structural fires tend to be minor, predominantly impacting residential properties. These incidents are typically short-lived and fall within local jurisdictional control. Yet, it's crucial to recognize that the threat of larger, more destructive fires exists

Industrial and commercial facilities in the area are also susceptible to fires, which, if not managed promptly, can rapidly escalate in severity. The presence of volatile materials in many of these locations means that fires may exhibit characteristics which are not commonly seen in residential fires. Examples of these characteristics include the temperature of the fire, amount of toxic fumes generated, and likelihood of reignition. Additionally, a fire in a commercial or industrial facility could affect more people and pose a greater threat to those near the fire or fighting the fire because of the size and/or contents of the structures.

The community impact of such fires is partially determined by the type and significance of the structure. While a single home's destruction might have a limited economic effect, the loss of a large manufacturing facility, critical facility, or community resource can have extensive economic repercussions. Similarly, the environmental consequences of a residential fire might be negligible, but an industrial or commercial blaze can leave an environmental imprint that lasts for years.

Fire risks in the region are constantly evolving as changes in building materials, building codes, safety procedures, industry standards, and other factors continue to shift.

3.3.18.4 PREVIOUS OCCURRENCES

The building stock in some jurisdictions means that small structural fires can be a near-daily occurrence. The majority of structural fires in the planning area do not result in fatalities and are contained before the fire can spread to other structures. The National Fire Incident Reporting System (NFIRS) is a repository of statistical data submitted by reporting fire departments. Table 102 below

[37] NFPA Research. "Fire Loss in the United States." nfpa.org, October 31, 2023. https://www.nfpa.org/education-and-research/research/nfpa-research/fire-statistical-reports/fire-loss-in-the-united-states.

[38] U.S. Fire Administration. "Residential Building Fire Causes," April 28, 2023. Retrieved on 07/20/2023 from: https://www.usfa.fema.gov/statistics/residential-fires/causes.html.

[39] U.S. Fire Administration. "Residential Building Fire Causes," April 28, 2023. Retrieved on 07/20/2023 from: https://www.usfa.fema.gov/statistics/residential-fires/causes.html.

shows the number of fire reports received, total incident property loss, incident content loss, and civilian injury and deaths from 2019-2022 submitted by reporting fire departments located in Polk County. Note that the data used to generate the table below does not include specific information about the type of fire incident. It is unknown, based on the statistical data available if any of these structural fires were beyond normal day-to-day response capabilities.

Table 102. NFIRS Fire Events and Related Damages, Injuries, and Fatalities in Polk County 2019-2022

Agency	Count of Fire Incidents	Basic Content Losses	Basic Property Losses	Basic Civilian Injuries Count	Basic Incident Civilian Deaths
Altoona Fire Department	9,891	$846,950	$2,194,780	5	2
Ankeny Fire Department	25,614	$2,440,166	$5,957,126	3	2
Bondurant Emergency Services	2,543	$512,413	$1,060,401	0	0
Camp Dodge Fire Department	17	$0	$0	0	1
Clive Fire Department	13,549	$622,500	$1,854,790	5	4
Des Moines Fire Department	119,498	$6,055,684	$21,916,131	54	10
Elkhart Fire Department	126	$356,000	$873,000	1	0
Johnston Metropolitan Fire Department	13,420	$1,362,950	$2,180,460	11	1
Pleasant Hill Fire Department*	2,053	$223,850	$524,962	5	0
Polk City Fire Department**	2,794	$258,600	$562,701	4	2
Runnells Fire Department***	547	$1,605,500	$1,319,500	6	0
Saylor Township Fire Department	4,267	$0	$0	0	3
Urbandale Fire Department	19,944	$1,267,876	$8,549,175	14	0
West Des Moines Fire Department	19,441	$1,751,126	$20,403,760	20	0
Windsor Heights Fire Department	2,817	$613,471	$2,785,910	8	0

Totals	**236,521**	**$17,917,086**	**$70,182,696**	**136**	**25**
*Data is only available for 2022; **Data is only available for 2021-2022; ***Data is only available for 2019-2020					

Several of the fire departments located in Polk County have jurisdictional boundaries outside Polk County (Clive, Des Moines, Grimes, Mitchellville, Urbandale, and West Des Moines) and the NFIRS data includes fires reported by fire departments that occurred in their entire jurisdictional area. In addition, there is the opposite situation where fire departments are based in neighboring counties and have portions of their jurisdictional boundaries that overlap into Polk County. Fire departments with this situation include: Madrid, Slater, Maxwell, Granger, Carlisle, Northern Warren, and Norwalk Fire Departments. Their NFIRS data is not included in this analysis since the majority of their coverage areas are in adjacent counties.

3.3.18.5 PROBABILITY OF FUTURE OCCURRENCES

Much of the fire prevention efforts by the municipalities participating in this plan have gone into prevention of nonresidential fires and the results have been highly effective. However, even with an increase in the prevention efforts in residential fires, both residential and nonresidential fires will continue to occur. Minor urban fires can be expected every day, and research by the National Fire Prevention Association (NFPA) found that a U.S. fire department responds to a fire every 24 seconds.[40] The probability of structural fires in the planning area is likely to increase during colder months when clogged chimneys and faulty furnaces and fire places can lead to structural fires. Based on previous occurrences, the chance that there will be structural fires in Polk County in any given year is considered "highly likely."

3.3.18.6 VULNERABILITY

Urban and structural fires, ranging from small-scale residential fires to large-scale industrial blazes, pose significant threats to people and property in the planning area. These fires can result from various causes, including accidents, negligence, or, in some cases, arson. The impact of such fires on community lifelines can be profound and multifaceted as shown below. While larger jurisdictions have more structures, structural fires can occur virtually anywhere. Additionally, large jurisdictions are more likely to have adequate equipment and first responders nearby, whereas smaller communities may need additional support to subdue major fires. Therefore, all jurisdictions in Polk County are considered to be equally vulnerable to this hazard. The specific impacts of structural fires on community lifelines are described in the table below.

[40] National Fire Prevention Association, Marty Ahrens, and Birgitte Messerschmidt. "Fire Safety in the United States since 1980," 2021. Retrieved on 07/19/2023 from: https://www.nfpa.org/~/media/Files/News%20and%20Research/Fire%20statistics%20and%20reports/US%20Fire%20Problem/osNFPAEcosystemFireSafetyReport2021.ashx?utm_source=emil&utm_medium=email_medium&utm_campaign=emil0358&utm_content=mbrs&order_src=e827

Table 103. Potential Impacts of Structural Fires on Community Lifelines

Lifelines	Impact Type	Description
Safety & Security		Fires pose immediate threats to life and property. Emergency services, including fire departments and law enforcement, are crucial for firefighting, evacuation, and maintaining public order. Ensuring the safety of residents and responders is the top priority.
Health & Medical		Fires can result in injuries from burns and smoke inhalation, necessitating emergency medical response and treatment. Healthcare facilities must be prepared for the sudden influx of patients during major fire incidents.
Housing & Building Infrastructure		Fires can destroy homes and businesses, leading to displacement and long-term housing needs for affected residents. The rebuilding process can be lengthy and complex, involving insurance claims, construction services, and community support.
Utilities		Fires can damage utility infrastructure, leading to disruptions in electricity, gas, water supply, and telecommunications. Restoring these services is critical for recovery and normalcy.
Environmental & Ecological Systems		Urban and structural fires can release pollutants and toxic materials into the environment, affecting air quality and potentially contaminating water and soil.

A) People

Smoke, evacuation injuries, and other various injuries would moderately elevate rates of injury, hospitalizations, and deaths. This could be a higher scoring if the prevalence of smoke detection systems were less prevalent, but much of the county's structures do contain a warning system. However, socially vulnerable populations including those living below the poverty line may be at an increased risk of this hazard because they are more likely to reside in older dwellings which may not

contain all of the appropriate warning systems nor utilize or adhere to the latest building and fire codes. Additionally, the elderly, young children, and those with physical or mental disabilities may be more vulnerable if they require additional time and care in order to safely evacuate a burning structure.

B) Structures

Urban fires are a more significant threat in areas where a relatively high number of buildings are more than 50 years old. Older residential structures that were built with lower standards for building construction and materials have created a regularly occurring threat of fire loss. Additionally, structural fires most frequently begin in residential structures, and they are often caused by human activity such as cooking and smoking. Troublingly, there is some indication that fires in residences are becoming more dangerous – a 2022 study found that individuals caught in these fires now have less time to reach safety than they would 50 years ago.[41] Some of the possible reasaons for this include increased use of flammable synthetic materials like polyurethane and increased popularity of open concept floorplans which make it harder to contain a fire. The risks posed by structural fires in large commercial and industrial buildings are largely determined by the contents of the building.

C) Systems

Structural fires can cause local utility outages if infrastructure is damaged. However, built in redudancy makes it unlikely that structural fires will cause countywide utility outages. If outages occur, backup power should be available to keep critical facilities open and operating. Access to Polk County may be temporarily limited in the event that a large structural fire impacts the Des Moines International Airport. Following any structural fire, it is imperative to restore any services which were interrupted in order to minimize the possibility of cascading issues caused by diminution of critical community systems.

D) Natural, Historic, and Cultural Resources

Structural fires generally do not represent a significant risk to natural and cultural resources. Historic structures may be more susceptible to fires as they often predate the widespread implementation of features and codes meant to minimize the frequency and severity of structural fires.

E) Community Activities

Individual community activities may need to be postponed, relocated, or cancelled if the host structure is damaged or destroyed by a fire. Widespread disruption of community activities is unlikely but not impossible. In an extreme example, a major fire at an industrial facility may produce harmful fumes which may prompt community leaders to urge citizens to temporarily remain indoors.

[41] Crown, Courtney. "Why Home Fires Burn Significantly Faster Now." *WTTV CBS4Indy*, November 3, 2022. https://cbs4indy.com/cbs4-investigates/why-home-fires-burn-significantly-faster-now/.

Existing Development

Structural fires are capable of damaging most structures, but there is an increased risk for older, residential structures. Structures which are several decades old may lack safety features such as smoke detectors in each bedroom and egress windows, and aged electrical wiring may increase the likelihood of a fire starting.

Future Development

New development is expected to adhere to the latest building and fire codes which are intended to increase the safety of occupants. However, there is some evidence suggesting that sythetic materials which are being used with increasing frequency can burn relatively quickly, and these materials may actually reduce the time individuals have to reach safety. When some synthetic materials begin burning they can produce highly toxic smoke which can quickly incapacitate anyone nearby. Future development which increases the local building density may also make it easier for a structural fire to reach new fuel sources (other structures) which can expand and prolong the fire.

Climate Change

The primary concerns pertaining to the impacts of climate change on structural fires center around the increased likelihood of intense and prolonged periods of heat and drought. Hot, dry conditions can make it easier for fires to ignite and more difficult to extinguish. See the sections on extreme temperature and drought for additional information.

Hazard Risk Score

Table 104. Structural Fire Probability and Health Impact Ratings

Health Severity	Community Impact	Public Health System Impact	Healthcare System Impact	Total Health Hazard Score	Probability
2	1	2	2	7	Highly Likely

3.3.19 THUNDERSTORM WITH LIGHTNING AND HAIL

3.3.19.1 DESCRIPTION

Thunderstorms are formed from a combination of moisture, rapidly raising warm air, and a lifting mechanism such as clashing warm and cold air masses. Atmospheric imbalance and turbulence may result in thunder, heavy rains (which may cause flooding), strong winds, microbursts, high straight-line winds (often mistaken for tornadoes), tornadoes, surface hail, or lightning. “Dry” thunderstorms that do not produce rain that reaches the ground are most prevalent in the western United States. Falling raindrops evaporate, but lightning can still reach the ground and can start wildfires. Thunderstorms can occur singly, in clusters, or in lines, and one system may spawn multiple events.

Most thunderstorms produce only lightning, thunder, and rain. The National Weather Service considers a thunderstorm severe if it produces hail at least one inch in diameter, wind 58 mph or

higher, or tornadoes. Typically, only 10% of thunderstorms reach severe levels. However, all thunderstorms are dangerous, according to FEMA.

Lightning is an electrical discharge between positive and negative regions of a thunderstorm. It is sudden, extremely destructive and potentially deadly. When the buildup becomes strong enough, lightning appears as a “bolt.” This flash of light usually occurs within the clouds or between the clouds and the ground. A bolt of lightning heats the air to temperatures approaching 50,000 degrees Fahrenheit. The average duration of a typical lightning stroke is around 30 microseconds.

Hailstones are formed when raindrops are carried upward by thunderstorm updrafts into cold areas of the atmosphere and freeze. Hailstones then grow by colliding with liquid water drops that freeze onto the hailstone’s surface. The hail falls when the thunderstorm's updraft can no longer support the weight of the hailstone, which can occur if the stone becomes large enough or the updraft weakens. Hail can be smaller than a pea or as large as a softball. Hail can damage property and harm people, pets, and livestock. Hail is also particularly destructive to plants and crops. Descriptions of hail sizes and typical damage impacts provided by the Tornado and Storm Research Organization are listed in the table below.

Table 105. List Tornado and Storm Research Organization Hailstorm Intensity Scale

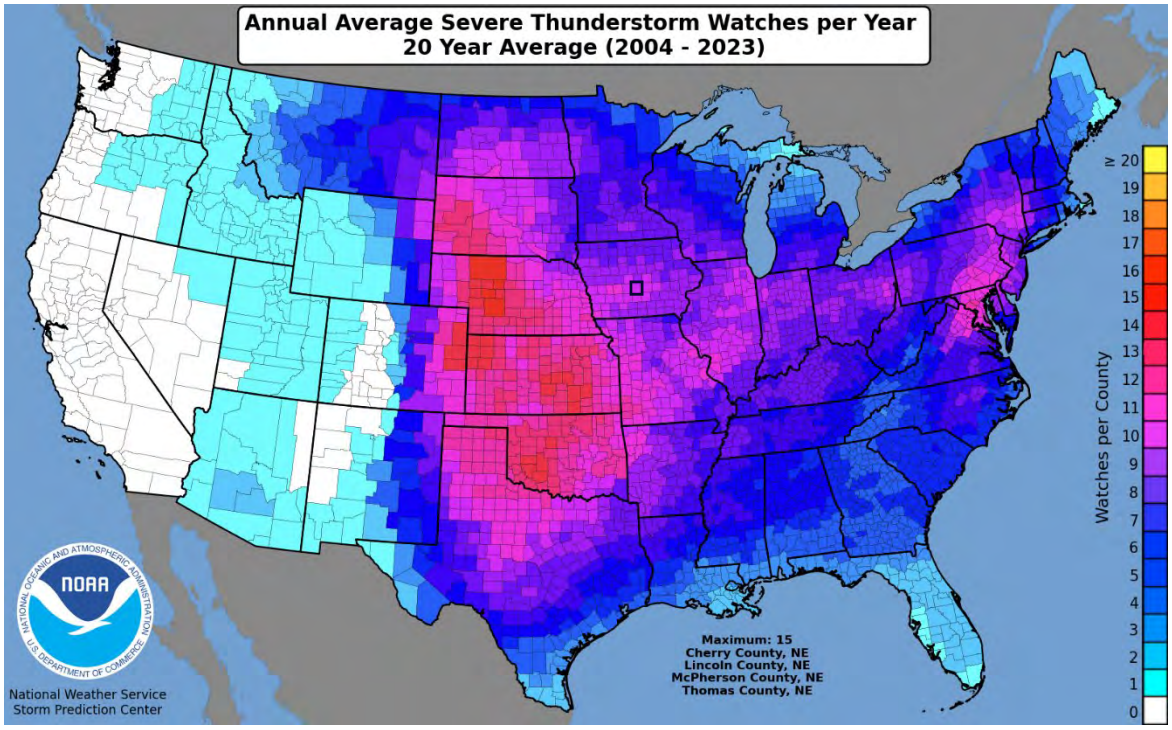
Intensity Category	Diameter (mm)	Diameter (inches)	Size Description	Typical Damage Impacts
Hard Hail	5-9	0.2-0.4	Pea	No damage
Potentially Damaging	10-15	0.4-0.6	Mothball	Slight general damage to plants, crops
Significant	16-20	0.6-0.8	Marble, grape	Significant damage to fruit, crops, vegetation
Severe	21-30	0.8-1.2	Walnut	Severe damage to fruit and crops, damage to glass and plastic structures, paint and wood scored
Severe	31-40	1.2-1.6	Pigeon’s egg > squash ball	Widespread glass damage, vehicle bodywork damage
Destructive	41-50	1.6-2.0	Golf ball > Pullet’s egg	Wholesale destruction of glass, damage to tiled roofs, significant risk of injuries
Destructive	51-60	2.0-2.4	Hen’s egg	Bodywork of grounded aircraft dented; brick walls pitted
Destructive	61-75	2.4-3.0	Tennis ball > cricket ball	Severe roof damage, risk of serious injuries
Destructive	76-90	3.0-3.5	Large orange > Soft ball	Severe damage to aircraft bodywork
Super Hailstorms	91-100	3.6-3.9	Grapefruit	Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open
Super Hailstorms	>100	4.0+	Melon	Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open

Source: Tornado and Storm Research Organization (TORRO) Note: In addition to hail diameter, factors including number and density of hailstones, hail fall speed and surface wind speeds affect severity.

3.3.19.2 LOCATION

Severe thunderstorms are regular events in Iowa. On average, Iowa sees hundreds of severe thunderstorms and thousands of non-severe thunderstorms each year.[42] Thunderstorms (both severe and non-severe) can occur anywhere in the planning area, and Polk County jurisdictions are generally considered equally vulnerable to the hazard. In more densely developed urban areas, severe thunderstorms are especially likely to damage homes and cars simply due to the number of these assets which can be impacted. In rural areas, severe thunderstorms – particularly those which produce large hail -- can cause extensive damage to crops, and this can significantly reduce agricultural yields. Figure 108 illustrates the average number of severe thunderstorm watches issued annually by County, and Figure 109 shows the frequency of lightning strikes by County. Figure 110 shows the location of hailstorms in Polk County as documented by the NCEI.

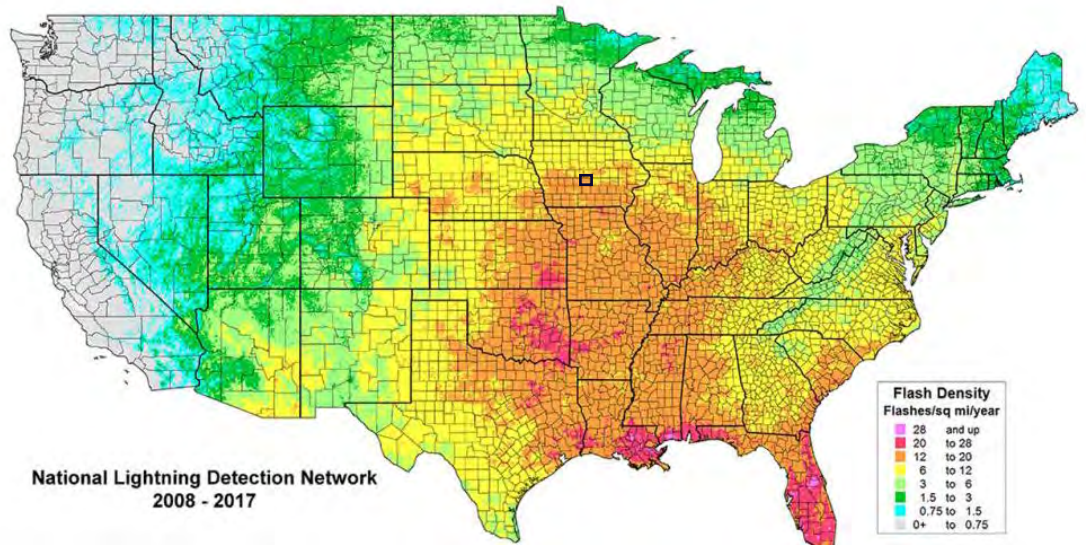
Figure 108. Average Annual Number of Severe Thunderstorm Watches by County 2004-2023



Note: Black Square indicates approximate location of Polk County

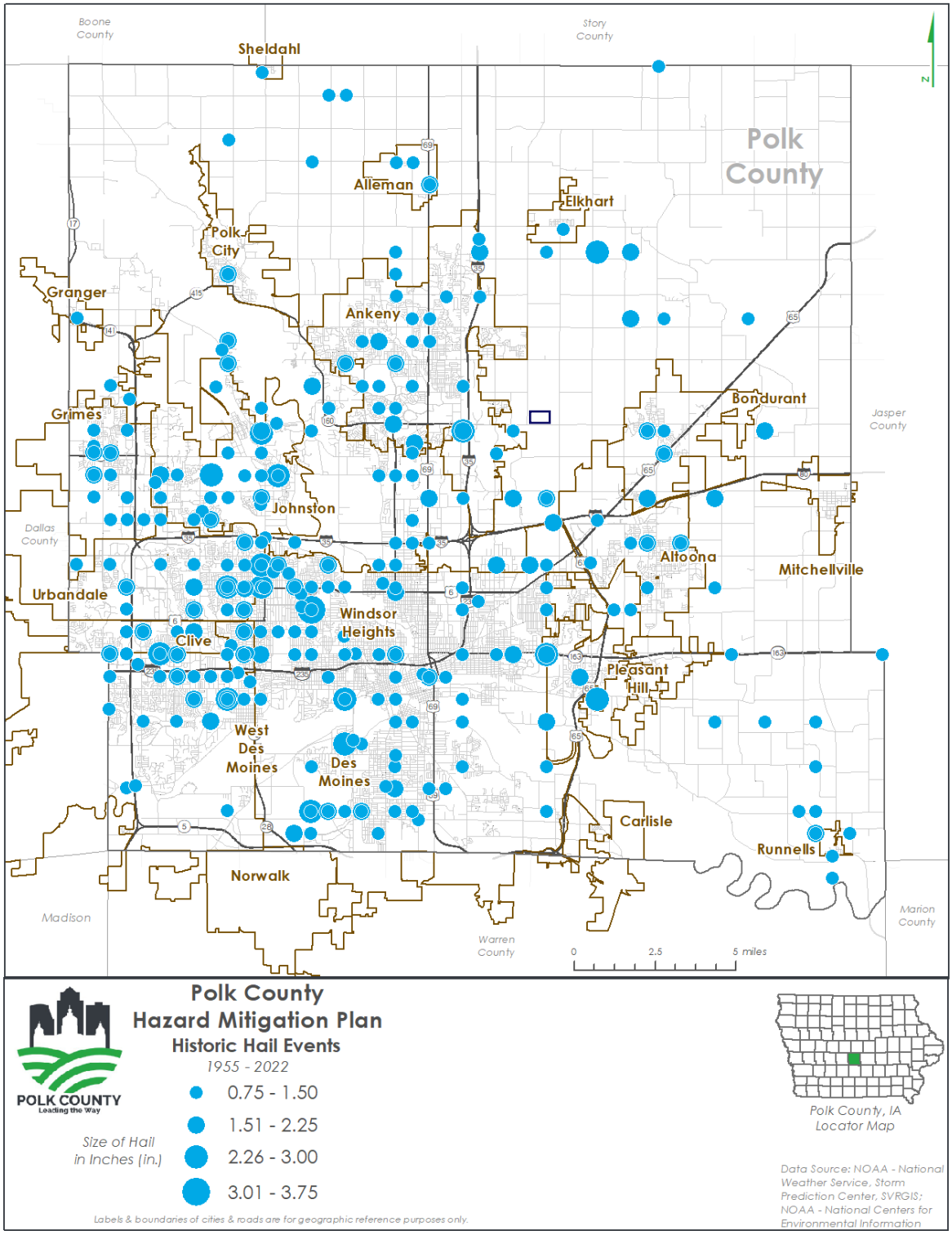
[42] Iowa Department of Homeland Security. "Severe Thunderstorms | READY IOWA." ready.iowa.gov, 2021. https://ready.iowa.gov/severe-thunderstorms/.

Figure 109. Frequency of Lightning in the U.S. 2008-2017



Note: Black Square indicates approximate location of Polk County

Figure 110. Hailstorm Events from 1955 – 2022 in Polk County, Iowa



3.3.19.3 EXTENT

Severe thunderstorms will typically affect an area for less than 60 minutes, although the storm system may exist for much longer than this. Severe thunderstorms are most common in the late spring and early summer months, but it is possible for them to occur at any point in the year as long as conditions are favorable. Severe thunderstorms can produce heavy rain which may lead to flash flooding, and lightning and hail can cause significant property damage. In rare instances, hail and lightning can result in injuries and death. According to the National Weather Service, lightning causes an average of 55-60 fatalities and 400 injuries annually.[43] However, there are no documented instances of lightning-related fatalities in Polk County. Hail – which can be as large as 7 inches in diameter and fall at speeds exceeding 100 mph – causes more than $1 billion in crop and property damage each year.[44]

3.3.19.4 PREVIOUS OCCURRENCES

Since 1953, Polk County has been included in eleven presidential disaster declarations pertaining to severe storms (see Table 106). Some of the damages that resulted in the declarations were from windstorms that accompanied the severe weather.

Table 106. Presidential Disaster Declarations for Severe Storms/Severe Weather that included Polk County (1953-2024)

Disaster Number	Description	Declaration Date (Incident Period)	Individual Assistance (IA) Public Assistance (PA)
DR-4784	Severe storms, tornadoes, and flooding	05-24-2024 (05-20-2024 – 05-21-2024)	IA
DR-4557	Severe storms	8-17-2020 (8-10-2020)	IA & PA
DR-4421	Severe storms and Flooding	3-23-2019 (3-12-2019 to continuing)	IA & PA
DR-4386	Severe Storms, Tornadoes, Straight-line winds, and Flooding	8-20-2018 (6-6-2018 to 7-2-2018	PA
DR-1930	Severe Storms, Flooding, & Tornadoes	7-29-2010 (6-1-2010 to 8-31-2010)	IA & PA
DR-1763	Severe Storms, Tornadoes, & Flooding	5-27-2008 (5-25-2008 to 8-13-2008)	IA & PA
DR-1518	Severe Storms, Tornadoes, & Flooding	5-25-2004 (5-19-2004 to 6-24-2004)	IA & PA
DR-1230	Severe Weather, Tornadoes, & Flooding	7-2-1998 (6-13-1998 to 7-15-1998)	IA & PA

[43] National Weather Service. "Thunderstorms, Tornadoes, Lightning... Nature's Most Violent Storms." weather.gov, June 25, 2010. https://www.weather.gov/media/owlie/ttl6-10.pdf.

[44] National Weather Service. "Thunderstorms, Tornadoes, Lightning... Nature's Most Violent Storms." weather.gov, June 25, 2010. https://www.weather.gov/media/owlie/ttl6-10.pdf.

DR-996	Flooding, Severe Storm	7-9-1993 (4-13-1993 to 10-1-1993)	IA & PA
DR-868	Flooding, Severe Storm	5-26-1990 (5-18-1990 to 7-6-1990)	IA & PA
DR-443	Flooding, Severe Storm	6-24-1974 (6-24-1974)	IA & PA

Source: FEMA

Regarding lightning, there are 41 lightning events documented by the NCEI which occurred in Polk County between 1998 and April 2024. During this time period there were six lightning-related injuries and no lightning-related deaths. Reported property damages resulting from these events total $1,756,000. There has been no reported lightning-related crop damage in Polk County according to data from the NCEI. Some of the more notable damaging lightning events are described in additional detail below. Information on these events is from NCEI:

- **May 8, 2022**—As storms moved across the Des Moines metro, a lightning strike is believed to have started a fire which caused significant damage to several condos.
- **August 20, 2019**—Emergency manager reported a house fire started by lightning.
- **May 1, 2018—**Public shared video of a lightning strike that resulted in setting a tree on fire and rupturing a gas line near Clive.
- **June 7, 2015—**Lightning struck a house in the early morning hours starting a fire in the garage and was soon fully engulfed in flames. The house was in a rural area of Polk County. The development also had no fire hydrants.
- **June 11, 2012**—As the thunderstorms moved through Bondurant, lightning struck a house setting it on fire.
- **August 18, 2010**—Lightning caused a house fire in Ankeny.
- **June 12, 2010**—Lightning struck a business in Runnells. Bakeris Roofing was struck and set on fire. The fire took eight fire departments two hours to put out the fire and the business was destroyed.
- **February 26, 2009**—Lightning struck an overpass along Interstate 80/35 along the north side of the Des Moines metro area and knocked a chunk of concrete off it. The concrete fell onto the windshield of a moving van, smashing through the glass. The driver was injured and admitted to the hospital with minor injuries.
- **August 7, 2007**—Lighting struck a house in Urbandale causing damage.
- **April 20, 2004**—Lightning struck a large multi-bay garage at a condominium complex in West Des Moines that caused $15,000 in estimated damages.
- **April 8, 2001**—Lightning caused a house fire in Johnston, and it was completely burned to the ground.
- **August 8, 2000**—Lightning struck a clubhouse at a recreational facility in Grimes. The clubhouse was set on fire and was a total loss.

Hail: The NCEI reports 574 hail events in Polk County between 1994 and April 2024 causing $15,156,500 in property damages and $847,000 in crop damages. There are no injuries or deaths associated with any of these events. Table 107 shows the number of hail events documented by the NCEI by the size of the hail.

Table 107. Hail Events Summarized by Hail Size

Hail Size (inches)	Number of Events 1994- 2024
3.25	1
3.00	3
2.75	6
2.50	3
2.00	17
1.75	68
1.50	33
1.25	28
1.00	219
0.88	107
0.80	1
0.75	87
0.52	1
Total	**574**

Source: National Climatic Data Center

Some of the more notable damaging hail events are described in additional detail below. Information on these events is from NCEI:

- **July 9, 2021—**The largest documented hail in Polk County occurred. Social media showed 3.25-inch hail near Beaverdale neighborhood.
- **May 16, 2019—**The local media reported hail caused damage to the roofs of Hoover High School and Meredith Middle School, making some spaces unusable. Some classes had to be moved, and some of the classes were dismissed early on Friday for repairs to be made. Some of the classrooms were flooded as well.
- **May 8, 2014**—Polk County experienced widespread hail ranging in sizes from 2.75 to 1.00 inch in diameter causing an estimated $561,000 in property damages
- **June 9, 2011**—Polk County experienced hail ranging in sizes from 1.75 to .88 inch in diameter causing an estimated $211,000 in property damages.
- **July 14, 2009**—The cities of Johnston, Grimes, Polk City and Des Moines experienced hail ranging in sizes from 3.00 to 1.00 inch in diameter causing an estimated $351,000 in property damages. The 3.00-inch diameter hail is the largest size hail recorded for Polk County during this timeframe.
- **May 25, 2008**—The cities of Ankeny, Des Moines, and Bondurant experienced hail ranging in sizes from 1.75 to .88 inch in diameter causing an estimated $56,000 in property damages.
- **March 30, 2006**—The Des Moines metropolitan area experienced an early spring thunderstorm with hail ranging in sizes from 2.00 to .88 inch in diameter causing an estimated $145,000 in property damages.
- **June 12, 2001**—On this day, the Des Moines metropolitan area got hit with record hail ranging in sizes from 2.75 to 1.00 inch in diameter causing over $10 million in property damages.

- **May 19, 1998**—The cities of Runnells, Ankeny, Johnston, and Clive reported hail ranging in size from 1.75 to .75 inch in diameter causing an estimated $408,050 in property damages.

The National Weather Service will issue a Severe Thunderstorm Watch when severe thunderstorms are considered possible in and near the area covered by the issued watch. A Severe Thunderstorm Warning will be issued when a severe thunderstorm has been reported by trained spotters or indicated by radar. Table 108 shows the number of Severe Thunderstorm Watches and Warnings issued by NOAA's National Weather Service Des Moines Weather Forecast Office between 2005 and 2022.

Table 108. Severe Thunderstorm Watch and Warning Issuance in Polk County 2005-2022

Year	Severe Thunderstorm Watches	Severe Thunderstorm Warnings
2022	8	12
2021	4	13
2020	9	12
2019	7	26
2018	8	25
2017	7	20
2016	6	8
2015	4	9
2014	4	18
2013	11	8
2012	5	19
2011	9	30
2010	23	25
2009	13	22
2008	15	54
2007	15	18
2006	12	15
2005	0	17
Total	**132**	**288**

Source: NOAA's National Weather Service Des Moines Weather Forecast Office

3.3.19.5 PROBABILITY OF FUTURE OCCURRENCE

Data from the NCEI on lightning and hail events in Polk County, as well as the Iowa Department of Homeland Security stating that there are hundreds of severe thunderstorms in Iowa each year, indicates that the probability of this hazard impacting Polk County in any given year is "highly likely." This is further supported by the number of past Severe Thunderstorm Warnings issued by the National Weather Service. Between 2005 and 2022 an average of 16 Severe Thunderstorm Warnings were issued for parts of Polk County each year (288 warnings over 18 years).

3.3.19.6 VULNERABILITY

Thunderstorms with lightning and hail can develop anywhere in Polk County, and all jurisdictions are considered equally vulnerable to the hazard. The potential impacts of thunderstorms with lightning and hail on specific community lifelines are described in the following table.

Table 109. Potential Impacts of Thunderstorms with Lighting and Hail on Community Lifelines

Lifelines	Impact Type	Description
Water & Wastewater Systems		Thunderstorms and hail can often lead to excessive rainfall and overwhelm drainage systems or other water systems. A potential to causes erosion to the environment causing sediment contamination seepage into utility operations such as wastewater and water treatment plants is also likely.
Food, Shelter, & Housing	 	Thunderstorms and hail often lead to heavy rainfalls that can damage homes, displacing residents from their homes. Hail, if large enough, can damage crops and impact agriculture production. This can lead to reduced yields, economic losses for farmers, and potential food shortages. Thunderstorms often create power outages which impact essential electrical components that are critical for many residents' quality of life and wellbeing.
Energy		Power outages are common following thunderstorms and hail due to damage to power stations and distribution lines. This can affect not only homes and businesses but also critical facilities like hospitals and emergency response centers.
Safety & Security		Thunderstorms and hail can be particularly dangers to any resident outside during the onset of a storm due to the risk of physical damage to hail, electrocution from lighting strikes, risk to flashfloods, and damage or injury from high winds. Secondary impacts can include communication interruptions, impacted response from first responders, and transportation interruptions.
Transportation		Thunderstorms and hailstorms can damage roads, bridges, and public transportation systems, impeding mobility and rescue efforts. Restoring transportation is vital for response operations and for the community to begin returning to normalcy. Restoration to the

		transportation systems can potentially take weeks to restore back to normal.

A) People

Certain groups and individuals are more vulnerable to the impacts of thunderstorms and hailstorms due to various factors. Vulnerability is often influenced by socioeconomic, geographical, and demographic factors. Particularly vulnerable population include elderly who rely on electrical medical equipment, low-income populations who don't have the means to prepare for or recover from these storms, homeless populations who are unable to take more substantial shelter from the storms, and communities located in low-lying and flood prone areas.

B) Structures

Thunderstorms and hail can impact structures in various ways, presenting risks ranging from direct strikes to indirect effects. Direct lightning strikes can cause structural damage, fires, or electrical system failures, posing immediate threats to buildings. Additionally, lightning strikes can ignite fires in nearby vegetation or materials, exacerbating the risk of damage or destruction. Electrical damage from lightning can lead to power surges, equipment malfunction, or electrical fires within structures. Structural damage can also result from thunderstorms with strong winds, hail, or heavy rain, causing roof damage, window breakage, or flooding. Even without direct damage, thunderstorms can disrupt utilities and transportation, hindering access to affected areas and complicating emergency response efforts.

C) Systems

Power grids are vulnerable to damage from thunderstorms, resulting in power outages that disrupt lighting, heating, and medical equipment. Water and wastewater systems may face overflow and contamination issues due to intense rainfall. Transportation infrastructure can be damaged, leading to road closures and hindering emergency response services. Communication networks may experience disruptions, affecting the dissemination of critical information. Emergency services, healthcare facilities, and schools can be strained, impacting their ability to respond and provide essential services. Critical infrastructure, including government facilities and communication towers, is susceptible to damage. Businesses and industries may suffer disruptions, affecting employment and economic activities. Emergency shelters and evacuation centers must be prepared to accommodate displaced individuals. To mitigate these impacts, communities should invest in resilient infrastructure, develop comprehensive emergency response plans, and prioritize measures to protect key facilities. Regular maintenance, early warning systems, and community preparedness efforts are crucial for enhancing the overall resilience of critical systems in the face of severe weather events.

D) Natural, Historic, and Cultural Resources

Thunderstorms and hail storms can exert profound impacts on natural, historic, and cultural resources across various dimensions. These weather events pose threats to natural ecosystems, causing vegetation damage, soil erosion, and habitat disruption. Historic sites and structures face structural damage, erosion, and deterioration due to hail and intense rainfall, affecting the preservation of architectural heritage. Cultural resources, including artifacts and collections in museums, are at risk of water damage and humidity-related issues. Archaeological sites may suffer from exposure and damage during severe weather events. Wildlife in natural habitats can be disrupted, with flooding and habitat destruction impacting breeding and nesting sites. Recreational areas, including parks and trails, may experience damage, affecting outdoor spaces and visitor experiences. Agricultural lands are vulnerable to crop loss, impacting both farmers and the food supply chain. Water bodies and forest ecosystems face challenges such as sedimentation, affecting water quality and biodiversity.

E) Community Activities

Thunderstorms and hailstorms can significantly impact a range of community activities, disrupting normal routines and creating challenges across social, recreational, and economic spheres. Outdoor events, festivals, and recreational activities often face cancellations or postponements to ensure participant safety. Social gatherings, community meetings, and festivals may be rescheduled, affecting local businesses and community spirit. Public services such as transportation and schools may experience disruptions, and community facilities like parks and recreational areas might temporarily close for safety reasons. Economic activities, especially in outdoor industries like construction and agriculture, can be interrupted, leading to economic losses. School closures due to thunderstorms affect education and childcare arrangements, impacting parents and educators.

Existing Development

Most lightning damages occur to electronic equipment located inside buildings. But structural damage can also occur when a lightning strike causes a building fire. In addition, lightning strikes can cause damages to crops if fields light on fire. Communications equipment and warning transmitters and receivers can also be knocked out by lightning strikes. Hail can cause extensive property damage – windows may be shattered, roofing and siding can be punctured or dented, and wood may splinter.

Future Development

Current development trends for Polk County are likely to increase vulnerability to severe thunderstorms and the accompanying lightning and hail. Additional development means more households and businesses vulnerable to damages from severe thunderstorms, lightning and hail.

Climate Change

Climate change is influencing the dynamics of thunderstorms, lightning, and hailstorms in Polk County, Iowa. The rising temperatures associated with climate change contribute to increased atmospheric instability, fostering the development of more frequent and intense thunderstorms with strong updrafts and potential severe weather events. Altered precipitation patterns, a consequence of climate change, affect the distribution and intensity of rainfall within thunderstorms, potentially leading

to localized heavy rainfall and an elevated risk of flash floods. Changes in atmospheric conditions may impact lightning activity, with warmer air potentially contributing to more frequent lightning strikes during thunderstorms. The conditions conducive to hailstorm formation are also influenced by climate change, as warmer surface temperatures combined with cooler air aloft may create an environment favoring larger hailstones and more intense hailstorms. Additionally, climate change can affect storm tracks, potentially altering the geographic distribution of these weather phenomena in Polk County.

Hazard Ranking Score

Table 110. Thunderstorm, Lightning, and Hail Probability and Health Impact Ratings

Health Severity	Community Impact	Public Health System Impact	Healthcare System Impact	Total Health Hazard Score	Probability
2	1	1	1	5	Highly Likely

3.3.20 TORNADO

3.3.20.1 DESCRIPTION

The NWS defines a tornado as a violently rotating column of air extending from a thunderstorm to the ground. The exact mechanics behind tornado generation are still not fully understood, but they broadly result from powerful thunderstorms or supercells, which are created by the contrast of warm, moist air, to the south, and cool, dry air, to the north. Often, vortices remain suspended in the atmosphere as funnel clouds. When the lower tip of a vortex touches the ground, it becomes a tornado.

Generally, the destructive path of a tornado is only a couple hundred feet in width, but stronger tornadoes can leave a path of devastation up to a mile or two wide. Usually, a tornado will stay on the ground for no more than 20 minutes, although a tornado can touch ground several times in different areas. Large hail, strong straight-line winds, heavy rains, flash flooding, and lightning are also associated with severe, tornado-producing storms and may cause significant damage to a wider area. Injury or death related to tornadoes most often occurs when buildings collapse; people are hit by flying objects or are caught trying to escape a tornado in a vehicle.

High winds not associated with tornadoes are profiled separately in this document in a separate section.

3.3.20.2 LOCATION

Iowa is typically considered to be part of the tornado-prone region of the U.S. often called “Tornado Alley”. The region’s boundaries can vary slightly depending on the source, but Tornado Alley most often consists of Texas, Oklahoma, Kansas, Missouri, Nebraska, and Iowa. Tornadoes can occur throughout the state, and they can impact both urban and rural areas. Tornadoes most frequently occur during the months of April, May, and June, but it is possible for them to occur in any month of the year. Tornadoes are possible in all portions of Polk County.

3.3.20.3 EXTENT

Tornadoes are among the most violent atmospheric storms and are capable of tremendous destruction. Wind speeds can exceed 250 miles per hour, and damage paths can be more than one mile wide and 50 miles long. Tornadoes have been known to lift and move objects weighing more than 300 tons a distance of 30 feet, toss homes more than 300 feet from their foundations, and siphon millions of tons of water from water bodies. Tornadoes also generate a tremendous amount of flying debris or "missiles," which often become airborne shrapnel that causes additional damage. If wind speeds are high enough, missiles can be thrown at a building with enough force to penetrate windows, roofs, and walls. However, the less spectacular damage is much more common.

Tornadoes are classified according to the EF- Scale (the original F – Scale was developed by Dr. Theodore Fujita, a renowned severe storm researcher). This update to the original F scale was implemented in the U.S. on February 1, 2007. The Enhanced Fujita scale is similar to the original scale but takes into account the quality of construction and standardizes different kinds of structures. The wind speeds for the EF scale and damage descriptions in Table 92 are based on information from the National Oceanic and Atmospheric Administration Storm Prediction Center.

Table 111 – The Enhance Fujita Scale

Scale	Wind Speed (mph)	Relative Frequency	Potential Damage Description
EF0	65-85	53.5%	Light. Peels surface off some roofs; some damage to gutters or siding; branches broken off trees; shallow-rooted trees pushed over. Confirmed tornadoes with no reported damage (i.e. those that remain in open fields) are always rated EF0).
EF1	86-110	31.6%	Moderate. Roofs severely stripped; mobile homes overturned or badly damaged; loss of exterior doors; windows and other glass broken.
EF2	111-135	10.7%	Considerable. Roofs torn off well-constructed houses; foundations of frame homes shifted; mobile homes complete destroyed; large trees snapped or uprooted; light object missiles generated; cars lifted off ground.
EF3	136-165	3.4%	Severe. Entire stores of well-constructed houses destroyed; severe damage to large buildings such as shopping malls; trains overturned; trees debarked; heavy cars lifted off the ground and thrown; structures with weak foundations blown away some distance.
EF4	166-200	0.7%	Devastating. Well-constructed houses and whole frame houses completely levelled; cars thrown, and small missiles generated.
EF5	>200	<0.1%	Explosive. Strong frame houses levelled off foundations and swept away; automobile-sized missiles fly through the air in excess of 300 ft.; steel reinforced concrete structure badly damaged; high rise buildings have significant structural deformation; incredible phenomena will occur.

Source: NOAA Storm Prediction Center

Information on the Enhanced Fujita Scale's damage indicators and degrees or damage is located online at www.spc.noaa.gov/efscale/ef-scale.html.

The advancement in weather forecasting has provided for the ability to predict severe weather that is likely to produce tornadoes days in advance. Tornado watches can be delivered to those in the

path of these storms several hours in advance. Lead time for actual tornado warnings is about 30 minutes. Tornadoes have been known to change paths very rapidly, thus limiting the time in which to take shelter. Tornadoes may not be visible on the ground if they occur after sundown or due to blowing dust or driving rain and hail.

3.3.20.4 PREVIOUS OCCURRENCES

Historically, 40 - 50 tornadoes are confirmed in Iowa per year. The majority of tornadoes are rated F/EF-0 and F/EF-1, and F/EF-5 tornadoes are exceedingly rare. Data from the 2023 Iowa Hazard Mitigation Plan indicates that less than 1% of tornadoes which impact Iowa are rated F/EF-4 or F/EF-5. According to the National Weather Service, there have only been 6 F/EF-5 tornadoes to hit Iowa since 1871, and only 1 of them occurred within the last 40 years (2008 Parkersburg tornado).

According to statistics reported by the National Centers for Environmental Information, Polk County had 49 recorded tornado events from 1980 to 2024. Of these, 1 was rated F/EF-4, 7 rated F/EF-2, 13 rated F/EF-1, and 28 rated F/EF-0 or not rated. These tornadoes caused no fatalities, a combined 99 injuries, over $96 million in property damages, and $102,200 in crop damages. A significant majority of the property damage resulting from tornado damage in Polk County came from one event in 2022. On March 5, 2020, an EF-2 tornado travel approximately 13.62 miles and caused an estimated $75,000,000 in damage.

On April 26, 2024, a series of severe storms spawned at least 19 tornadoes across Iowa. Assessment of the event was still ongoing as this plan was finalized, and these events have not yet been added to the database from which the table below was generated. Preliminary reports found that the storm created one tornado in Pleasant Hill, with estimated peak winds of 125 mph and rating of EF-2.

Table 112. Tornadoes in Polk County 1980-2023 by F/EF Rating

Enhanced Fujita Scale Rating	Number of Tornadoes	Property Damage	Crop Damage	Injuries	Deaths
F/EF-0	28	$110,750	$2,700	0	0
F/EF-1	13	$1,440,000	$20,000	1	0
F/EF-2	7	$92,785,000	$79,500	98	0
F/EF-3	0	0	0	0	0
F/EF-4	1	$2,500,000	0	0	0

F/EF-5	0	0	0	0	0

Table 113. Damage Caused by Tornadoes in Polk County 1980-2023

Total Property Damage	Total Crop Damage	Total Injuries	Total Deaths
$96,835,750	$102,200	99	0

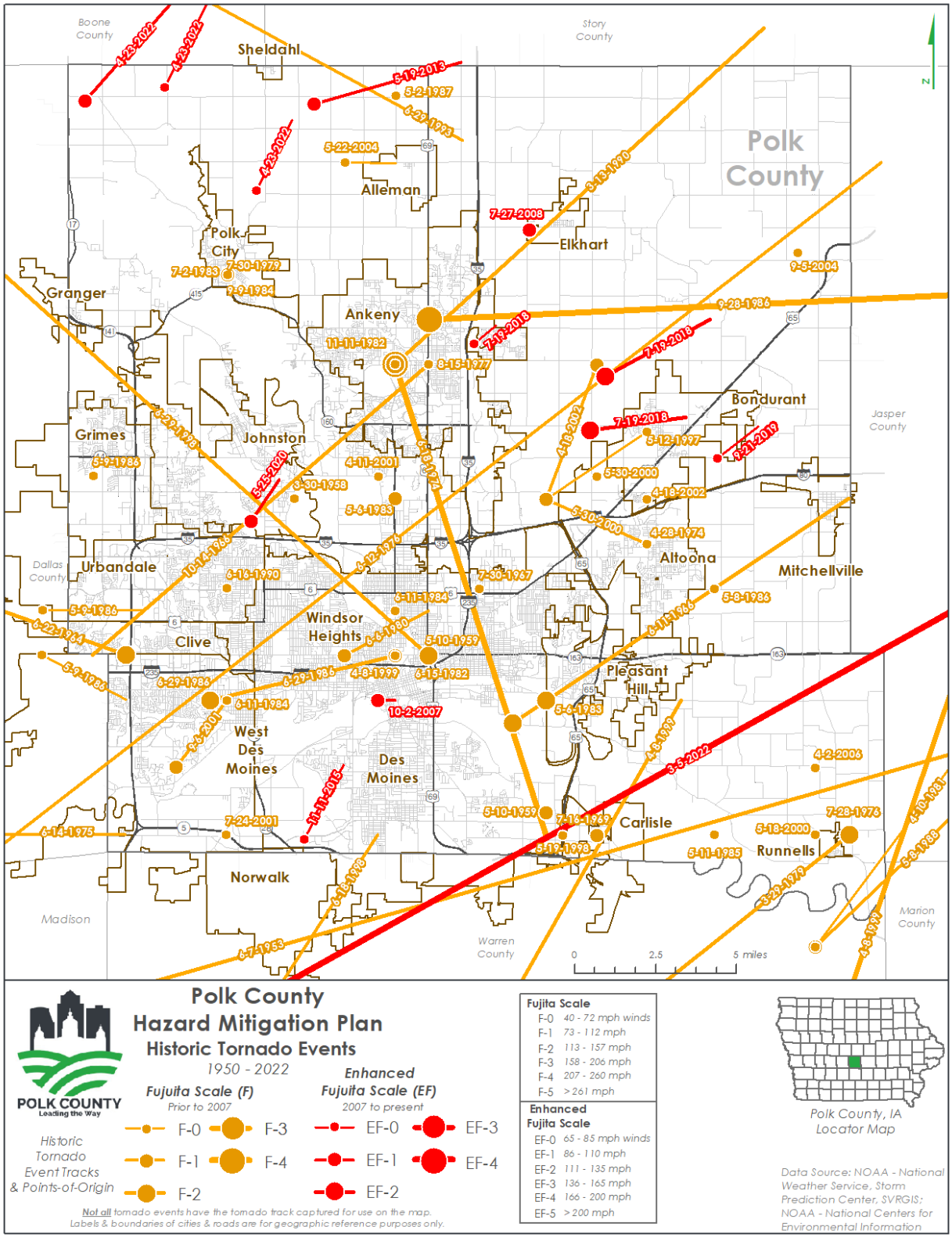
Polk County has been included in seven presidential disaster declarations that involved tornadoes since 1953. The date of declaration, disaster number, and descriptions of these events are provided below in Table 114**.**

Table 114. FEMA Disaster Declarations Pertaining to Tornadoes in Polk County

Disaster Number	Date of Disaster Declaration	Disaster Description
4386	5/24/2024	Strong tornadoes impacted communities in the state of Iowa, with multiple reported fatalities.
4779	05/14/2024	I strong tornadoes impacted communities in the state of Iowa, with multiple reported fatalities. The President approved a Major Disaster Declaration on May 14,
4386	08/20/2018	In July 2018, an outbreak of tornadoes swept across Central Iowa, three touched down in Polk County. In total, 76 properties were damaged: 49 residential properties and 3 public facilities were assessed with minor damage, 19 residential and one commercial property were assessed with major damage, and 4 homes were classified as destroyed.
1930	07/29/2010	Severe storms, flooding, & tornadoes resulted in damages in Polk County.
1763	05/27/2008	The primary damages in Polk County associated with this declaration were for severe storms and flooding. However, an EF1 tornado touched down southwest of Elkhart on July 27th. The tornado damaged two houses and caused considerable tree damage. Parts of the house were blown up into the trees.

1518	05/25/2004	The primary damages in Polk County associated with this declaration were for severe storms and flooding. However, on May 22, 2004, a F0 tornado touched down in Alleman. No damages were reported.
1230	07/02/1998	On June 29th, a complex weather situation occurred over much of central and southern Iowa. Many places reported winds over 80 mph with incredible tree damage and numerous buildings damaged or destroyed. At least 38 counties were declared disaster areas by the Federal Government due to the severe damage and flooding. An F2 tornado touched down in Grimes. But most of the damage appeared to be from straight line winds based on a storm survey that was done following the event.

Figure 111. Polk County Map of Historic Tornado Events, 1950-2022



2024 Tornadoes

Polk County experienced multiple tornadoes during April and May 2024. These tornadoes were occurred as part of a two larger tornado outbreaks which impacted the State of Iowa on April 26 and May 21. During the first outbreak, it is known that an EF-2 tornado touched down in southern Des Moines and moved in a notheast direction, impacting the community of Pleasant Hill. This tornado lifted just as it was reaching the southern end of the City of Altoona. During the second outbreak, an EF-2 tornado touched down near the City of Johnston and traveled in a northeastern direction for approximately 41 miles. This tornado passed by the communities of Polk City, Ankeny, and Alleman before moving into Story County. Due to the recency of these tornadoes, assessments are still ongoing. Since these events are not yet documented in the NCEI Storm Events Database they are not included in Table 112, Table 113, and Figure 111, and they are not factored into the assessment of the probability of future occurrences.

3.3.20.5 PROBABILITY OF FUTURE OCCURRENCE

According to data provided by the National Centers for Environmental Information, there have been 49 reported tornadoes in Polk County in a 44 year time period, which averages out to more than one tornado per year. However, only 24 of the 44 years between 1980 and 2024 were years with recorded tornadoes, and this is an indication that tornadoes have often occurred in clusters in Polk County. With tornadoes occuring in more than 50% of the years since 1980, it is “highly likely” that some portion of Polk County will experience tornado activity in any given year.

3.3.20.6 VULNERABILITY AND IMPACTS

Tornadoes can occur anywhere in Polk County, and all jurisdictions in the county are considered equally vulnerable to the hazard. The potential impacts of tornadoes on specific community lifelines are shown in the table below.

Table 115. Potential Impacts of Tornadoes on Community Lifelines

Lifelines	Impact Type	Description
Safety & Security		Immediate threats to life and property necessitate rapid emergency response, including search and rescue operations, medical assistance, and maintaining public order to prevent looting or other crimes in affected areas.

Lifelines	Impact Type	Description
Health & Medical		Tornadoes can cause injuries ranging from minor to severe, placing a sudden demand on healthcare facilities. Hospitals and clinics must be prepared for an influx of patients and possible damages to their own infrastructure.
Housing & Building Infrastructure		Tornadoes can cause significant damage to homes, businesses, and public buildings, leading to displacement of residents and the need for temporary shelters and long-term rebuilding efforts.
Utilities		Tornadoes can disrupt essential services by damaging power lines, water mains, and communication networks. Restoring these services is crucial for recovery and supporting other lifeline sectors.
Transportation		Damage to roads, bridges, and transportation infrastructure can hinder emergency response efforts and the movement of goods and people. Clearing debris and repairing infrastructure are critical post-tornado activities.
Economic Stability		The economic impacts of tornadoes include the costs of emergency response, rebuilding, and the broader effects of property destruction and business interruptions. Insurance claims and financial assistance play significant roles in economic recovery.

A) People

Those most at risk from tornadoes include people living in mobile homes, campgrounds and other dwellings without secure foundations or basements. People in automobiles are also very vulnerable to twisters. The elderly, very young, and the physically and mentally handicapped are most vulnerable because of the lack of mobility to escape the path of destruction. People who may not

understand watches and warnings due to language barriers are also at risk. Additionally, individuals who live in remote areas may be less likely to hear or receive warnings about tornadoes, and it be more difficult to for emergency services to reach these individuals following a tornado strike.

B) Structures

In terms of the built environment, mobile homes are consistently identified as structures which are especially vulnerable to tornadoes (and high winds in general). Although it is not uncommon for these structures to utilize lightweight construction, mobile homes are vulnerable to tornadoes mainly because they lack the robust anchoring used for permanent structures. Furthermore, mobile homes typically do not have attached basements which can serve as shelters in the event of a tornado. According to the National Weather Service, approximately 40% of all tornado-related fatalities occur in mobile homes. Additionally, individuals are 15-20 times more likely to lose their life in a tornado compared to individuals in permanent structures hit by tornadoes. Due to the vulnerability of mobile homes, the National Weather Service does not recommend that mobile home residents stay in their home during a tornado. Instead, the National Weather Service recommends that these individuals take shelter in the community storm shelters which are usually found in mobile home parks.

Additionally, structures often associated with agriculture sometimes utilize light-weight construction that is vulnerable to tornadoes. Types of structures which may fall into this category include machine sheds, barns, and grain silos. These structures may also contain various items which can easily become airborne projectiles, and they should not be used as a shelter from tornadoes.

C) Systems

Tornadoes can damage or disrupt many of the systems that communities often rely upon, including emergency services, electricity, and internet connectivity. Downed power lines can be both a hazard and an obstacle for victims and first responders. Strong tornadoes and windstorms can also directly damage roads, bridges, and transportation infrastructure, and this may further hinder emergency response efforts and the movement of goods and people. There are also multiple rail corridors passing through Polk County, and strong tornadoes are capable of damaging railroad infrastructure. Any trains which happen to be in the path of a tornado could be derailed, and this could have serious consequences if hazardous materials are being transported.

D) Natural, Historic, and Cultural Resources

Tornadoes and windstorms can damage virtually all structures in Polk County, including sensitive natural, historic, and cultural resources. Historic structures may be particularly vulnerable to these events if they were built prior to the widespread adoption of building codes and regulations. Any suspected damage would likely need to be thoroughly inspected, and the time required to do this could have negative impacts on the local economy.

E) Community Activities

Tornadoes and windstorms have the potential to disrupt community events across Polk County. Both outdoor and indoor events may be cancelled or postponed if there is a sufficient risk of tornadic activity or high winds in the day's forecast, although these events are often difficult to accurately predict. Any structures which are impacted by a tornado or high winds may be destroyed or damaged to the point where the structural integrity needs to be evaluated before further use.

Existing Development

To estimate vulnerability to tornadoes, a potential tornado scenario was analyzed for each jurisdiction in the planning area. The scenario chosen was an F1/EF1 tornado with wind speed of approximately 100 mph. From the NCEI reports, it was determined that there have been 10 F1 tornadoes in Polk County since 1980. Of these 10 reported tornadoes, the average width was 50 yards and the average length was 3 miles.

To provide estimated damage results from an F1/EF1 tornado with these dimensions, a hypothetical tornado track was considered at a 45 degree angle running through the approximate center of each jurisdiction in the planning area. For Unincorporated Polk County and the incorporated cities, the parcel data provided by the Des Moines Area Regional GIS Partnership was utilized as the basis for determining damage estimates. Separate analyses were not conducted for the public school districts. Since the public school districts have a relatively small number of buildings, it was not possible to apply this same type of random tornado path scenario to provide meaningful results.

With the infinite variables associated with tornado occurrences such as wind speed, direction, length, width, time on the ground, etc., it is not possible to accurately estimate future losses. However, this methodology provides loss estimates for a defined scenario. Utilizing GIS data with associated building values considers variations in density of the built environment as well as variations in values. Although it is not possible to accurately predict tornado losses, this analysis demonstrates how the impacts of specific tornado scenario would vary among jurisdictions in Polk County.

Once the number and values of buildings within the hypothetical tornado track were determined, a 10% damage calculation was made. This damage percent is based on information from the NOAA Storm Prediction Center, which estimates that a F1/EF1 tornado of this magnitude would severely strip roofs; mobile homes overturned or badly damaged; loss of exterior doors; windows and other glass broken.

Table 116 provides the results of the analysis in terms of the number and value of buildings in the scenario tornado path and estimated losses in Polk County. A planning area total was not calculated as this scenario is not meant to indicate that these damages would occur simultaneously.

Table 116 - F/EF 1 Tornado Scenario Loss Estimates for Jurisdictions in Polk County

Jurisdiction	# of Parcels in Path	Total Building Values in Path	10% Loss Estimate
Unincorporated Polk Co.	152	$16,834,660	$1,683,466

Jurisdiction	# of Parcels in Path	Total Building Values in Path	10% Loss Estimate
City of Alleman	32	$4,963,880	$496,388
City of Altoona	75	$93,963,110	$9,396,311
City of Ankeny	729	$272,097,878	$27,209,788
City of Bondurant	122	$57,621,110	$5,762,111
City of Carlisle	19	$741,010	$74,101
City of Clive	137	$111,876,600	$11,187,660
Delaware Township	200	$49,420,930	$4,942,093
City of Des Moines	1,472	$256,292,710	$256,292,710
City of Elkhart	102	$10,800,670	$1,080,067
City of Granger	4	$246,480	$24,648
City of Grimes	181	$47,386,400	$4,738,640
City of Johnston	195	$148,488,210	$14,848,821
City of Mitchellville	67	$9,425,960	$942,596
City of Pleasant Hill	55	$8,110,540	$811,054
City of Polk City	171	$39,019,910	$3,901,991
City of Runnells	25	$1,694,270	$169,427
Saylor Township	196	$66,517,570	$6,651,757
City of Sheldahl	17	$2,009,290	$200,929
City of Urbandale	256	$270,897,900	$27,089,790
City of West Des Moines	556	$247,856,890	$24,785,689
City of Windsor Heights	182	$50,608,400	$5,060,840
Totals	**4,945**	**$1,766,874,378**	**$176,687,438**

For those cities in which only a portion of their boundary is within Polk County, only Polk County parcels and values were included in the results

The City of Des Moines would have the highest number of buildings impacted and the third highest dollar losses. The City of West Des Moines has the highest total building values in this scenario path. This is expected due to the high building density in City of West Des Moines and it being one of wealthiest cities in Iowa.

Future Development

Vulnerability to tornadoes is likely to increase in the planning area as both the population and urban fabric of Polk County continues to grow. Public buildings such as schools and government offices as well as mobile home parks and high-occupancy structures should consider inclusion of a tornado shelter to protect occupants in the event of a tornado. Additionally, future development of structures utilizing light-weight construction such as mobile homes should be carefully planned to ensure that occupants of these dwellings will have quick access to shelters which are adequately designed to protect lives when a tornado strikes.

Climate Change

There is ongoing research of the dynamics between climate change and tornadic activity. Establishing a connection between the two phenomena is particularly difficult as the formation of tornadoes is still not fully understood. Polk County is encouraged to monitor this field for any forthcoming developments.

Hazard Risk Score

Table 117. Tornado Probability and Health Impact Ratings

Health Severity	Community Impact	Public Health System Impact	Healthcare System Impact	Total Health Hazard Score	Probability
1	3	3	2	9	Highly Likely

3.3.21 TRANSPORTATION INCIDENT

3.3.21.1 DESCRIPTION

This hazard encompasses the following: air transportation, highway transportation, railway transportation, and waterway transportation incidents. The transportation incidents can involve any mode of transportation that directly threatens life and which results in property damage and/or adversely impact a community's capabilities to provide emergency services.

Air Transportation

An air transportation incident may involve a military, commercial or private aircraft. Air transportation is playing a more prominent role in transportation as a whole. Airplanes and helicopters are used to transport passengers for business and recreation as well as thousands of tons of cargo. A variety of circumstances can result in an air transportation incident; mechanical failure, pilot error, enemy attack, terrorism, weather conditions and on-board fire can all lead to an air transportation incident.

Highway Transportation

A highway transportation incident can involve a single vehicle or multiple vehicles, requiring responses exceeding normal day-to-day capabilities. An extensive surface transportation network exists in Iowa with local residents, travelers, and business and industry relying on this network on a daily basis. Hundreds of thousands of trips a day are made on the streets, roads, highways, and interstates in the state. When the designed capacity of the roadway is exceeded, the potential for a major highway incident increases. Weather conditions play a major factor in the ability of traffic to flow safely in and through the state as does the time of day and week. Incidents involving buses and other high-occupancy vehicles could trigger a response that exceeds the normal day-to-day capabilities of response agencies.

Railway Transportation

A railway transportation incident is a train accident that directly threatens life and/or property, or adversely impacts a community's capabilities to provide emergency services. Railway incidents may include derailments, collisions, and highway/rail crossing accidents. Train incidents can result from a variety of causes including human error, mechanical failure, faulty signals, or problems with the track. Results of an incident can range from minor "track hops" to catastrophic hazardous material incidents

and even human/animal casualties. With so many miles of track in Iowa, vehicles must cross the railroad tracks at numerous at-grade crossings.

Waterway Transportation

A waterway incident is an accident involving any water vessel that threatens life and/or adversely affects a community's capability to provide emergency services. Waterway incidents primarily involve pleasure crafts on rivers and lakes.

3.3.21.2 LOCATION

Air Transportation

Polk County and central Iowa are primarily served by the Des Moines International Airport (DSM). As Iowa's largest airport, DSM handles a great deal of passengers and goods. The Des Moines International Airport is owned by the City of Des Moines and is governed through a seven member Airport Board of Trustees. The Board is comprised of Des Moines citizens appointed by the Des Moines City Council. The Des Moines International Airport serves as the major air passenger and airfreight center for the State. The Ankeny Regional Airport is the principal reliever facility for the Des Moines International Airport. The other airports within the CIRTPA area are all classified as general aviation airports with no commercial air service.

Highway Transportation

The entire planning area is subject to transportation incidents and all participating jurisdictions are affected. The transportation routes include Interstates 35 and 80, US Highways 6, 65 and 69, Iowa State Highways 5, 17, 141, 44, 415, and 163. According to the Iowa Department of Transportation (DOT), Polk County is one of 12 counties included in DOT District 1 that maintains 770 bridges and 1,781 centerline miles (4,561 lane miles) within the District. The interstate corridors of I-35 and I-80 are critical trade corridors for transporting cargo, and segments of I-35 and I-80 within Polk County and the Des Moines metropolitan area have truck traffic counts above 13,000 vehicles per day.

Railway Transportation

Polk County has three Class I railroad companies: the Union Pacific (UP) Railroad Company, the Burlington Northern Santa Fe (BNSF), and the Norfolk Southern (NS) Railroad and one Class II railroad company serving the area is Iowa interstate Railroad (IAIS). According to the Iowa DOT, in 2020 Polk County had 189 miles of active rail.

Waterway Transportation

Polk County does not have navigable waterways for commercial purposes but has the following recreational boating lakes and rivers.

Table 118. Recreational Boating Lakes/Rivers in Polk County

Lake/River	Location
Saylorville Reservoir	North edge of Des Moines
Big Creek Lake	2 miles north of Polk City
Blue Heron Lake (Raccoon River Park)	Southwest of West Des Moines; Raccoon River Park
Dale Maffitt Reservoir	6 miles southwest of Des Moines
Easter Lake	Southeast edge of Des Moines
Grays Lake	Fleur Drive, Des Moines
Des Moines River	Stratford to Saylorville
Chichaqua Bottoms (Skunk River)	Northeast Polk County
Raccoon River	Southwest West Des Moines & Southwest Des Moines
Lake Petoka	Northeast edge of Bondurant

3.3.21.3 EXTENT

Air Transportation

DSM is Iowa's busiest airport – more than 2,800,000 passengers enplaned and deplaned at the airport in 2022.[45] Freight that is moved through the DSM includes mail and cargo such as bulk freight and express/small packages. In 2022, more than 75,750,000 lbs of cargo was enplaned and deplaned as DSM.[46] The DSM is ranked among the top 50 airports in the nation in terms of the amount of cargo shipped. Air transportation accidents are unlikely, but mechanical issues and human errors are not impossible. According to the NTSB, air accidents occur most frequently during the landing phase of flight, but less than 2% of these accidents result in fatalities. Less than 10% of air accidents occur during mid-air maneuvering, but nearly 60% of these accidents result in fatalities.[47] It is probable that the volume of flights in and out of DSM inherently increases the vulnerability of the surrounding area to the consequences of air transportation accidents.

Highway Transportation

Highway transportation incidents are very complex. Contributing factors can include a roadway's design and/or pavement conditions (e.g. rain, snow and ice), a vehicle's mechanical condition (e.g. tires, brakes, lights), a driver's behavior (e.g. speeding, inattentiveness and seat belt usage), as well as the driver's condition (e.g. alcohol use, age-related conditions, physical impairment). In fact, the driver's behavior and condition factors are the primary cause in an estimated 67% of highway crashes and a

[45] Des Moines Airport Authority. "December 2023 Airport Traffic Statistics." flydsm.com, December 2023. https://www.flydsm.com/filesimages/ABOUT%20US/NEWS%20AND%20STATISTICS/December%202023%20Airport%20Traffic%20Statistics.pdf.

[46] Des Moines Airport Authority. "December 2023 Airport Traffic Statistics." flydsm.com, December 2023. https://www.flydsm.com/filesimages/ABOUT%20US/NEWS%20AND%20STATISTICS/December%202023%20Airport%20Traffic%20Statistics.pdf.

[47] National Transportation Safety Board. "General Aviation Accident Dashboard: 2012-2021." ntsb.gov. Accessed February 12, 2024. https://www.ntsb.gov/safety/data/Pages/GeneralAviationDashboard.aspx.

contributing factor in an estimated 95 percent of all crashes. As such, highway safety needs go beyond just physical improvements to a specific roadway or intersection and include changes to driver behavior. These are best addressed with a multi-disciplinary approach using engineering, enforcement, emergency response, and education strategies. Most traffic accidents are relatively minor and do not result in injuries, but major traffic accidents involving multiple vehicles (sometimes called pile-ups) can cause multiple fatalities and significantly disrupt traffic.

Railway Transportation

The severity of railway transportation accidents is largely determined by the location of the accident and the cargo being transported. The derailment of a mile-long freight train carrying hazardous materials in a dense urban setting can be catastrophic. Such an event would likely require a mandatory evacuation of the surrounding population, and a major cleanup operation could be required to minimize the impact of hazardous materials contamination. A railway accident in rural settings can also pose unique challenges like difficulty in accessing the area with adequate equipment and personnel for rescue or cleanup. Even accidents which do not directly result in injuries can have economic consequences as passing a stricken train is more difficult than passing a stricken car on the road.

Stretches of railway in Polk County facilitate the movement of than 20 million tons per mile, annually. In 2013, the leading commodities, comprising approximately 83% of rail-borne tons, are: coal (134.4 million tons); food or kindred products (38.0 million tons); chemicals and allied products (31.2 million tons); farm products (20.0 million tons); and nonmetallic minerals (17.4 million tons).[48]

Waterway Transportation

The primary risks of accidents involving recreational watercraft are injuries and/or fatalities resulting from the force of impact or drowning. Like highway transportation accidents, the condition of the occupants often contributes to waterway transportation accidents.

3.3.21.4 PAST OCCURRENCES

Air Transportation

According to the National Transportation Safety Board (NTSB) Polk County has had very few air transportation incidents in the past decade. During the period from January 1, 2014 to January 1, 2024, there were only 5 air accidents documented by the NTSB in Polk County. Of these 5 accidents, none were fatal, but 2 were classified as “significant” by the NTSB. Both fixed-wing and rotary-wing aircraft were involved in air accidents in Polk County. For information and details about other air transportation incidents in Iowa, see https://www.ntsb.gov/_layouts/ntsb.aviation/index.aspx.

[48] Iowa Department of Transportation. “Iowa State Rail Plan.” iowadot.gov, November 2022. https://iowadot.gov/iowainmotion/railplan/2017/IowaSRP2022.pdf.

Highway Transportation

The Iowa Department of Transportation's Office of Traffic and Safety maintains traffic crash statistics and locations in Iowa. Table 119 shows the number of crashes reported in Polk County from 2014 through 2023 by jurisdiction. Crashes are categorized by the following: fatal, major, minor, possibility unknown, and property damage only.

Table 119. Severity of Traffic Accidents in Polk County by Jurisdiction 2014-2023

Jurisdiction	Property Damage Only	Possible / Unknown Injuries	Minor Injuries Suspected	Serious Injuries Suspected	Fatal Crash	Total Crashes
City of Alleman	33	5	8	1	0	47
City of Altoona	2,086	635	234	27	6	2,988
City of Ankeny	7,204	1,695	808	135	12	9,854
City of Bondurant	363	81	65	8	7	524
City of Clive	2,194	459	201	32	4	2,890
Delaware Township	N/A	N/A	N/A	N/A	N/A	N/A
City of Des Moines	33,872	14,121	4,684	808	149	53,634
City of Elkhart	20	4	1	0	0	25
City of Grimes	1,411	224	112	12	4	1,763
City of Johnston	1,291	218	142	25	4	1,680
City of Mitchellville	49	5	6	3	0	63
City of Pleasant Hill	1,171	264	157	26	6	1,624
City of Polk City	314	42	36	6	1	399
City of Runnells	20	6	3	2	0	31
City of Urbandale	5,067	1,031	499	71	12	6,680
City of West Des Moines	5,731	1,551	772	121	17	8,192
City of Windsor Heights	880	229	81	12	1	1,203
Saylor Township	N/A	N/A	N/A	N/A	N/A	N/A
Unincorporated*	7,924	1,669	1,048	214	64	10,919
Polk County Total	**69,630**	**22,239**	**8,857**	**1,503**	**287**	**102,516**
*Unincorporated crash data estimated by subtracting city crashes from total Polk County crash data						

Railway Transportation

According to the U.S. Department of Transportation's Federal Railroad Administration, there were 96 railroad-related accidents/incidents reported over the past decade (2014-2023). Those events resulted in a total of 41 injuries and 2 fatalities. The most recent fatality occurred in 2019. Table 120 shows the accidents/incidents, injuries, and fatalities reported each year from 2014 through 2023. According to the Iowa Department of Transportation, throughout Iowa, rail car traffic has increased but the number of derailments in relationship to the traffic is trending downward.

Table 120. Railroad Accidents/Incidents, Injuries, and Fatalities in Polk County 2014-2023

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	10-Year Totals
Total Accidents / Incidents	17	7	10	4	9	11	6	10	10	12	**96**
Total Injuries	11	1	7	3	2	2	2	3	6	4	**41**
Total Fatalities	1	0	0	0	0	1	0	0	0	0	**2**

Waterway Transportation

There have been few significant waterway incidents in Iowa and even less in Polk County. The presence of low-head dams along the Des Moines River limits the viability of commercial waterway transportation in Polk County. Previous waterway transportation incidents are likely limited to recreational vehicles, primarily on Saylorville Reservoir.

3.3.21.5 PROBABILITY OF FUTURE OCCURRENCES

A major transportation incident can occur at any time, even though traffic engineering, inspection of traffic facilities, and land use management of areas adjacent to roads and highways has increased, incidents continue to occur. As the volume of traffic on the county streets, highways and interstates increases, the number of traffic accidents will likely also increase. The combination of large numbers of people on the road, wildlife, unpredictable weather conditions, potential mechanical problems and human error always leaves the potential for a transportation accident.

Based on the available information, the probability of air transportation, highway, railway or waterway incidents which directly threaten life and results in property damage and/or adversely impact a community's capabilities to provide emergency services is **"**Highly Likely" in any given year.

3.3.21.6 VULNERABILITY AND IMPACTS

Transportation incidents can almost always be expected to occur in specific areas, on or near airports, roadways, railroads, lakes, rivers or other transportation infrastructure. The exception is air transportation incidents can occur anywhere. However, it is difficult to predict the magnitude of any specific event because these types of events are accidental and the circumstances surrounding these events will impact the extent of damage or injuries that occur. Highway transportation incidents, which are the most common type of transportation incident, generally involve isolated impacts to a few vehicles and persons per incident. While larger jurisdictions tend to have more miles of roadway where these crashes can happen, it is entirely possible for such incidents to occur even in communities with extremely limited roadway networks. Therefore, all communities in Polk County are considered equally vulnerable to this hazard.

Table 121. Potential Impact of Transportation Incidents on Community Lifelines

Lifelines	Impact Type	Description
Safety & Security		Immediate response is essential for ensuring public safety, managing traffic, securing the crash site, and preventing secondary incidents. Emergency services, including police, fire, and rescue teams, are vital for controlling the situation.
Health & Medical		Crashes often result in injuries or fatalities, requiring prompt medical attention. Emergency medical services provide on-site treatment and transport victims to hospitals. Healthcare facilities must be prepared for a sudden influx of patients, especially in mass casualty incidents.
Housing & Building Infrastructure		Significant crashes, especially those involving large vehicles or trains, can cause damage to nearby buildings and infrastructure. This may lead to temporary displacement of residents and businesses.
Utilities		Crashes can disrupt utility services, particularly if infrastructure like power lines, water pipes, or communication towers are damaged. Restoring these services is crucial for community functioning.
Transportation Services		Transportation crashes directly impact the transport network. Roads may be closed, rail services disrupted, and air or sea travel affected. This disrupts the movement of people and goods and can have wider economic implications.

Lifelines	Impact Type	Description
Economic Stability		The economic impacts include direct costs associated with emergency response, medical care, and infrastructure repair, as well as indirect costs like traffic delays and loss of business.

A) People

The people most vulnerable to transportation accidents are those involved in the accident. The energy imparted on the occupants of the vehicle(s) in an accident can cause serious injury and death. Particularly violent events may also produce projectiles which can harm anyone in the immediate vicinity. When transportation accidents result in fires and/or the release of hazardous materials, the wider public may suffer from exposure, and evacuations could be necessary.

B) Structures

Significant crashes, especially those involving large road vehicles, trains, or aircraft can cause damage to nearby buildings and infrastructure. Damages may result from direct impact by the vehicle, projectiles produced by a crash, and fire. Such impacts may lead to temporary displacement of residents and businesses.

C) Systems

Significant transportation accidents can cause extensive damage to transportation infrastructure (roads, railways, airport tarmac, etc.), power transmission lines, communications, pipelines, and other community systems. Additionally, the release of hazardous materials could contaminate the local water supply. Impacts of transportation accidents on key community systems are of particular concern due to the consequences as well as the frequency with which these systems are in close proximity to each other. In many areas it is normal for railways, highways, communication and power lines, and even water and wastewater infrastructure to utilize the same land.

D) Natural, Historic, and Cultural Resources

The primary impact of transportation accidents on natural resources is contamination. It is not uncommon for transportation accidents to result in minor fuel spills, but these can often be remedied in a relatively quick manner. However, larger spills like those which can result from transportation accidents involving bulk shipments can be much more difficult and time consuming to contain. A significant release of hazardous materials can kill wildlife, livestock, and pets, cause widespread crop failure, and destroy nature preserves.

E) Community Activities

Community activities may need to be postponed, cancelled, or relocated if transportation accidents damage or destroy sites which are used to facilitate them. Evacuations may also interrupt normal community activities.

Existing Development

As alluded to in previous sections, there is a significant network of transportation infrastructure inside Polk County. The impacts of most transportation incidents are limited to the immediate area. However, transportation incidents in densely populated areas have the potential to damage buildings, and many types of transportation incidents could result in hazardous materials incidents as discussed in a previous hazard profile.

Future Development

As the populations of many Polk County communities continue to grow, it is highly likely that transportation infrastructure – particularly highways – will continue to grow, as well. The Des Moines Area Metropolitan Planning Organization's *Year 2030 Long-Range Transportation Plan* addresses the metro's growing population and employment that are supplemented with increased transportation needs. This plan includes roadways, pedestrian, bicycle and transit system of the Des Moines area and makes recommendations for future transportation needs.

Additionally, The Iowa Department of Transportation, Office of Aviation, produced the Aviation System Plan 2010-2030 that makes recommendations for future development of the air transportation system until 2030. The plan describes the role of air transportation for Iowans for moving people and goods. In regard to rail transportation, the Iowa Department of Transportation produced the Iowa State Rail Plan in 2021 – this plan describes the anticipated role of rail transportation through 2040. The plan anticipates a 52% increase in overall freight moved via rail through Iowa, as well as an 8% increase in ridership for passenger services by 2040.

Climate Change

There is a lack of evidence suggesting that climate change will directly impact the frequency and severity of transportation incidents in the planning area. However, recent evidence linking greenhouse emissions and climate change has spurred community leaders to consider the impact of transportation on climate change. To this end, the Iowa Department of Transportation is assessing the ways in which transportation networks can be improved. One example of this is the recommendation that, as possible, railways should be the option of choice for freight transportation. Railroads are up to three times more fuel efficient than trucks on the basis of ton-miles transported, and as greenhouse gas emissions directly relate to fuel consumption, every ton-mile of freight moved by rail instead of truck reduces environmental damages and costs by 84%.

Hazard Risk Score

Table 122. Transportation Incident Probability and Health Impact Ratings

Health Severity	Community Impact	Public Health System Impact	Healthcare System Impact	Total Health Hazard Score	Probability

2	1	1	3	7	Highly Likely

3.3.22 WINDSTORM

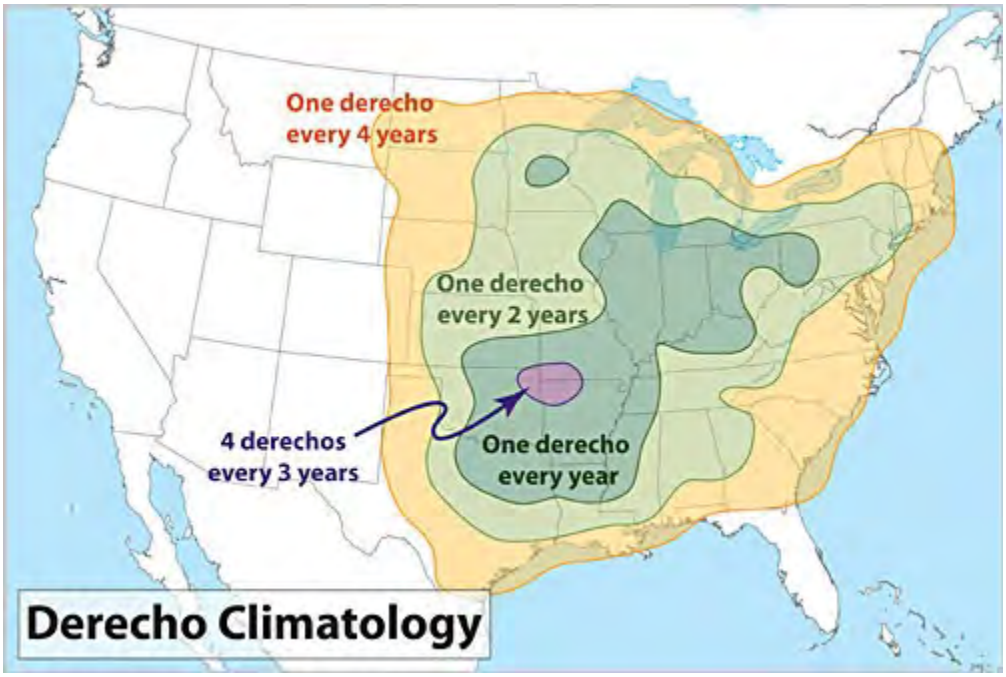
3.3.22.1 DESCRIPTION

Windstorms are created when extreme winds, typically associated with thunderstorms or downbursts, generate excessive and damaging wind speeds and can be responsible for structural and property damage. Windstorms may have a destructive path that is several miles wide, like that of a thunderstorm. Large hail, strong straight-line winds, heavy rains, flash flooding, and lightning are also associated with severe storms and may cause significant damage to a wider area. Large-scale extreme windstorms are often referred to as “Derechos” and can cause destruction similar to tornadoes but across a wider geographic extent.

3.3.22.2 LOCATION

According to the National Oceanic and Atmospheric Administration, derechos in the U.S. typically occur along two axes. The first axis extends from Mississippi Valley into the Ohio Valley, and the other streches from the southern plains into the mid-mississippi valley. All of Iowa, including Polk County, is susceptible to windstorms and derechos. Derechos tend to occur in families or groups. This means that once the first one occurs, there is a good chance that more derechos will occur within the following few days, although not necessarily in the same location. Approximately 70% of all U.S. derechos occur between May and August.

Figure 112. Frequency of Derecho Occurrences in the U.S.



Source: National Weather Service Forecast Office Cleveland, OH, public domain. Accessed 2/21/2024
https://upload.wikimedia.org/wikipedia/commons/0/04/Derechoclimo.png

3.3.22.3 EXTENT

Derechos are most common in the warm season, and those involved in outdoor activities are especially at risk. Campers or hikers in forested areas are vulnerable to being injured or killed by falling trees. Occupants of cars and trucks also are vulnerable to falling trees and utility poles. Further, high profile vehicles such as semi-trailer trucks, tractors, buses, and sport utility vehicles may be blown over. Strong windstorms/derechos have been documented producing wind speeds of more than 140 miles per hour.

The National Weather Service can issue High Wind Watch, High Wind Warning, and Wind Advisory to the public. The following are the definitions of these issuances:

- High Wind Watch—This is issued when there is the potential of high wind speeds developing that may pose a hazard or is are life-threatening.
- High Wind Warning—The 1-minute surface winds of 35 knots (40 mph) or greater lasting for one hour or longer, or winds gusting to 50 knots (58 mph) or greater, regardless of duration, that are either expected or observed over land.
- High Wind Advisory—This is issued when high wind speeds may pose a hazard. Sustained winds 25 to 39 mph and/or gusts to 57 mph.

Windstorms can also be dangerous for people who are indoors. As with tornadoes, mobile homes, in particular, may be overturned or destroyed, and barns, machine sheds, and similar buildings can collapse. People inside homes, businesses, and schools are sometimes victims of falling trees and branches that crash through walls and roofs; they also may be injured by debris such as flying glass from broken windows. Power windstorms can also cause structural damage to buildings (for example, removal of a roof) which can pose danger to those within.

Typically, derecho-producing storm systems move at speeds of 50 mph or greater, and a few have been clocked at 70 mph. For anyone caught outside, such rapid movement means that the typical warning signs of inclement weather like darkening skies and other visual cues appear on very short notice. The advance notice given by a derecho often is not sufficient for one to take protective action.

3.3.22.4 PAST OCCURRENCES

According to Polk County Emergency Management, the Outdoor Warning Siren System (OWSS) will sound when forecasted or actual wind speeds reach or exceed 70 miles per hour (61 knots). According to data from the National Centers for Environmental Information, there have beeen 178 instances of storms producing winds which would trigger the Polk County OWSS. These events caused approximately $74,908,100 worth of damage and injured 40 people. There have been no reported fatalities associated with windstorms in Polk County since 1980.

Table 123. Windstorm Damages in Polk County Since 1980

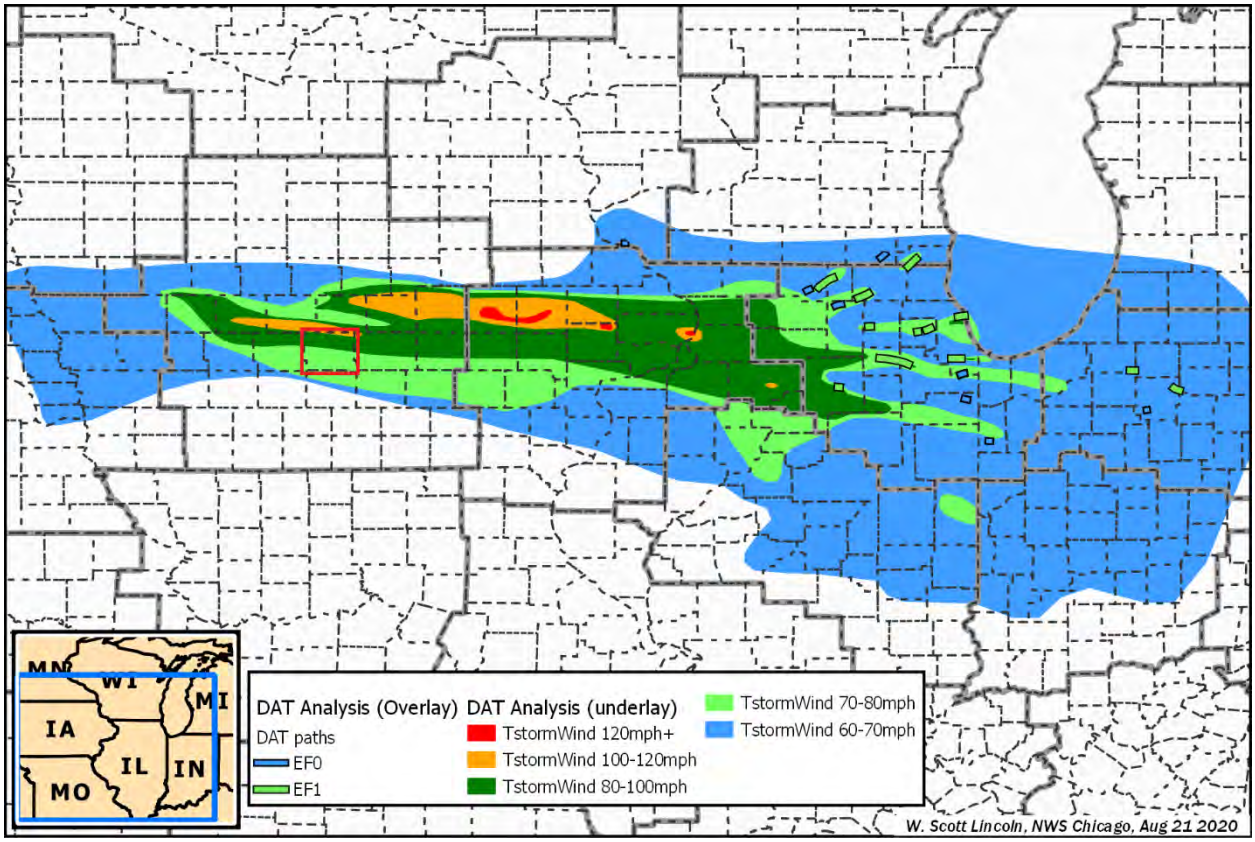
Total Property Damage ($)	Total Crop Damage ($)	Total Injuries	Total Deaths
$72,850,000	$2,058,100	40	0

2020 Derecho

One of the largest windstorms to impact the planning area in recent history occurred in August 2020. Polk County was one of many counties across Iowa, Illinois, and several other midwest states which experienced significant damage as a result of the 2020 derecho. The 2020 derecho left hundreds of thousands of individuals without power, and four deaths were attributed to the storm. In Polk County, wind speeds of 80-90 miles per hour were recorded, while other parts of Iowa experienced wind speeds of more than 130 miles per hour. The impact of the 2020 derecho led to FEMA DR-4557, which remains the only Presidential Major Disaster Declaration for high winds exclusive of tornadic activity covering Polk County. Declarations pertaining to high winds which accompanied tornadic activity are described in the tornado hazard section. In total, the 2020 derecho caused approximately $11.2 billion, making it the costliest thunderstorm disaster in U.S. history.[49]

[49] Kiel, Kyle. “August 2020 Derecho: A Look Back at the Costliest Thunderstorm Disaster in US History.” https://www.kwqc.com, August 10, 2022. https://www.kwqc.com/2022/08/10/august-2020-derecho-look-back-costliest-thunderstorm-disaster-us-history/.

Figure 113. August 2020 Derecho Wind Speeds with Polk County Outlined in Red



3.3.22.5 PROBABILITY OF FUTURE OCCURRENCE

Thunderstorms are reasonably well-forecast, but derecho forecasting remains among the most challenging tasks facing operational meteorologists today. The difficulty of predicting these events is primarily due to two limitations: (1) the imprecise nature of the observational network (relative that necessary) to produce an accurate and detailed picture of the propensity for thunderstorms with strong surface winds, and (2) our incomplete understanding of the processes that lead to repetitive, linearly-organized storm development.[50]

Many meteorological factors may come together to yield an environment conducive to strong windstorms/derechos. The variation of these factors over space and time is important in fostering or hindering development of these systems. The current reality is that two nearly identical meteorological settings at a given location might yield vastly different outcomes depending upon how the atmosphere evolved to that point in time, as well as how conditions vary around that location. According to data from the National Oceanic and Atmospheric Administration, Polk County can expect a derecho

[50] Corfidi, Stephen, Jeffry Evans, and Robert Johns. "Facts About Derechos - Very Damaging Windstorms." spc.noaa.gov, January 11, 2022. https://www.spc.noaa.gov/misc/AbtDerechos/derechofacts.htm.

approximately once every two years. Therefore, damaging high winds, windstorms, and derechos are considered “likely” in Polk County.

3.3.22.6 VULNERABILITY AND IMPACTS

Windstorms are relatively large meteorological events which can impact the entire county, and all jurisdictions in Polk County are vulnerable to the hazard. The potential impacts of windstorms on specific community lifelines are described in the table below.

Table 124. Potential Impacts of Windstorms on Community Lifelines

Lifelines	Impact Type	Description
Safety & Security		Immediate threats to life and property necessitate rapid emergency response, including search and rescue operations, medical assistance, and maintaining public order to prevent looting or other crimes in affected areas.
Food, Shelter, & Housing		A significant windstorm can destroy large swaths of crops and lead to food insecurity in the planning area.
Health & Medical		Windstorms can cause injuries ranging from minor to severe, placing a sudden demand on healthcare facilities. Hospitals and clinics must be prepared for an influx of patients and possible damages to their own infrastructure.
Housing & Building Infrastructure		Windstorms can cause significant damage to homes, businesses, and public buildings, leading to displacement of residents and the need for temporary shelters and long-term rebuilding efforts.

Lifelines	Impact Type	Description
Utilities		Windstorms can disrupt essential services by damaging power lines, water mains, and communication networks. Restoring these services is crucial for recovery and supporting other lifeline sectors.
Transportation		Damage to roads, bridges, and transportation infrastructure can hinder emergency response efforts and the movement of goods and people. Clearing debris and repairing infrastructure are critical post-tornado activities.
Economic Stability		The economic impacts of windstorms include the costs of emergency response, rebuilding, loss of crop yields, and the broader effects of property destruction and business interruptions. Insurance claims and financial assistance play significant roles in economic recovery.

A) People

Due to windstorms having similar impacts as tornadoes, there is significant overlap of populations vulnerable to these events. People who are unable to access a sufficiently reinforced shelter in a timely manner are among the most vulnerable to windstorms. Individuals who may have difficulty accessing an appropriate shelter include those living in mobile homes, campgrounds, and other dwellings without secure foundations or basements. People in automobiles are also very vulnerable to windstorms as strong gusts can overturn vehicles, particularly high profile vehicles like semis and trucks.

Additionally, the elderly, very young, and physically and mentally handicapped may be more vulnerable to windstorms if their mobility limits the prospect of reaching shelter in a timely manner. People who's primary language is not English may also be more vulnerable if they are unable to understand watches, warnings, and other critical information about an impending windstorm. Lastly, it may be challenging for emergency services to reach individuals who reside in remote areas if windstorms produce debris which obstructs transportation routes.

B) Structures

Windspeeds produced by windstorm events are often comparable to tornadoes, and the resulting damage can be similar. Structures which utilize light-weight construction techniques are the

most likely to be damaged by windstorms. Mobile homes, barns, machine sheds, and grain silos are just a few examples of structures which can be particularly vulnerable to strong winds. Damaged structures can become sources of debris which can cause further damage to people and property, and structures may collapse if the damage is severe.

C) Systems

Windstorms can have detrimental effects on a variety of community systems. Communications and electricity are among the most vulnerable systems due to the volume of infrastructure exposed. It is common for this infrastructure to be above ground and exposed to direct damage from high wind. Indirect damage to communication and electricity infrastructure can occur when windstorms generate debris like tree branches which may fall on transmission lines.

Windstorms generally do not cause direct damage to transporation infrastructure. However, windstorms can produce conditions which make it unsafe to utilize transportation infrastructure, as cars, trucks, trains, and even airplanes can be thrown around and damaged by high speed winds. Debris created by windstorms can also obstruct roads and railways.

D) Natural, Historic, and Cultural Resources

Since windstorms/derechos do not have narrow tracks like tornadoes, the associated wind damage can be extensive and affect entire (and multiple) counties. The extent of windstorms/derechos can be highly concerning in areas like Polk County where agriculture is a significant piece of the community. High winds can quickly flatten hundreds of thousands of acres of cropland. Widespread destruction of cropland can have severe economic consequences and potentially jeopardize food security in the affected area. The impact of the 2020 derecho on agriculture was particularly severe due to it occurring mere weeks ahead of the harvest season. Agriculture officials in Iowa estimated that crop yields would likely be halved as a result of the disaster.[51]

E) Community Activities

Community activities may need to be relocated, postponed, or cancelled if the sites normally used to host these activities are damaged or destroyed by windstorms.

Existing Development

Mobile homes are among the most vulnerable structures due to their light weight and lack of anchoring to the ground; it is not uncommon for these structures to be severely damaged by windstorms. Larger structures are less likely to be physically damaged by the force of high winds, but airborne debris can shatter windows and puncture walls.

[51] Eller, Donnelle. "Iowa's Corn Yields Could Be Cut in Half Where Hurricane-Force Winds Flattened Fields." The Des Moines Register. Accessed February 21, 2024. https://www.desmoinesregister.com/story/money/agriculture/2020/08/12/up-half-iowas-corn-yield-could-lost-derecho-damage/3357009001/.

Future Development

Modern building codes help ensure that new development is largely able to withstand windstorms. However, extreme events such as the 2020 derecho can produce windspeeds which approach the limits of what wood-framed and sheet-metal structures can withstand. Thicker and stronger building materials – as well as additional design elements – are recommended to protect structures from windspeeds exceeding 100 miles per hour. To help inform new development which can better resist extreme wind speeds, FEMA produced the document "FEMA Building Science Resources to Assist with Reconstruction after an Extreme-Wind Event."

Climate Change

The impacts of climate change on windstorms is an area of ongoing research. At present, there is conflicting evidence for whether global wind speeds are increasing, decreasing, or unchanged. However, researchers have found that climate change appears to be shifting the typical "season" of severe weather events like tornadoes and hurricanes, and it is plausible that wind storms may be affected in a similar way.[52] In such a scenario, the planning area should anticipate more windstorms occuring outside of the spring and summer months typically associated with severe weather in Iowa.

Hazard Risk Score

Table 125. Windstorm Probability and Health Impact Ratings

Health Severity	Community Impact	Public Health System Impact	Healthcare System Impact	Total Health Hazard Score	Probability
1	0	0	1	2	Likely

3.3.23 WINTER STORM

3.3.23.1 DESCRIPTION

A major winter storm can last for several days and be accompanied by high winds, freezing rain, sleet, heavy snowfall, and cold temperatures. The National Weather Service describes different types of winter storm events as follows:

- **Blizzard**: A winter storm which produces the following conditions for three (3) consecutive hours or longer: (1) sustained winds or frequent gusts 30 knots (35 mph) or greater, and (2) falling and/or blowing snow reducing visibility frequently to less than 1/4 mile.
- **Cold/wind chill:** Period of low temperatures or wind chill temperatures reaching or exceeding locally/regionally defined advisory (typical value is -18 °F or colder) conditions.
- **Extreme cold/wind chill:** A period of extremely low temperatures or wind chill temperatures reaching or exceeding locally/regionally defined warning criteria (typical value around -35° F or colder).

[52] Robinson, Walter A. "Climate Change and Extreme Weather: A Review Focusing on the Continental United States." *Journal of the Air & Waste Management Association* 71, no. 10 (October 3, 2021): 1186–1209. https://doi.org/10.1080/10962247.2021.1942319.

- **Frost/Freeze:** A surface air temperature of 32 degrees Fahrenheit (°F) or lower, or the formation of ice crystals on the ground or other surfaces, for a period long enough to cause human or economic impact, during the locally defined growing season.
- **Heavy snow:** Snow accumulation meeting or exceeding locally/regionally defined 12 and/or 24-hour warning criteria. This could mean values such as 4, 6, or 8 inches or more in 12 hours or less; or 6, 8, or 10 inches in 24 hours or less.
- **Ice Storm:** Ice accretion meeting or exceeding locally/regionally defined warning criteria (typical value is 1/4 or 1/2 inch or more).
- **Sleet:** Sleet is simply frozen raindrops and occurs when the layer of freezing air along the surface is thicker. This causes the raindrops to freeze before reaching the ground**.** Sleet accumulations meeting or exceeding locally/regionally defined warning criteria (typical value is 1/2 inch or more).
- **Winter storm:** A winter weather event that has more than one significant hazard (i.e., heavy snow and blowing snow; snow and ice; snow and sleet; sleet and ice; or snow, sleet, and ice) and meets or exceeds locally/regionally defined 12 and/or 24-hour warning criteria for at least one of the precipitation elements.

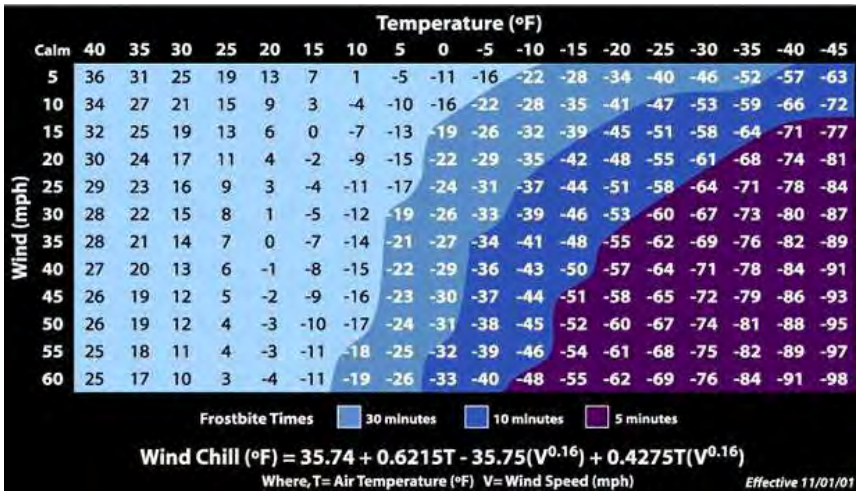
3.3.23.2 LOCATION

The entire planning area is susceptible to the effects of winter storm, as the entire state of Iowa can experience heavy snow, high winds, extreme cold temperatures, and freezing rain. Furthermore, many of these events can occur as part of the same system. The snow season in Polk County normally extends from late October through mid-April, but significant snowfall has been recorded as early as September 16 (1881) to as late as May 28 (1947).

3.3.23.3 EXTENT

Severe winter storms include extreme cold, heavy snowfall, ice, and strong winds which can push the wind chill well below zero degrees Fahrenheit in the planning area. Wind can greatly amplify the impact of cold ambient air temperatures. Figure 114 below shows the relationship of wind speed to apparent temperature and typical time periods for the onset of frostbite. Under the right conditions, frostbite can occur in as little as 5 minutes.

Figure 114. Frostbite Chart

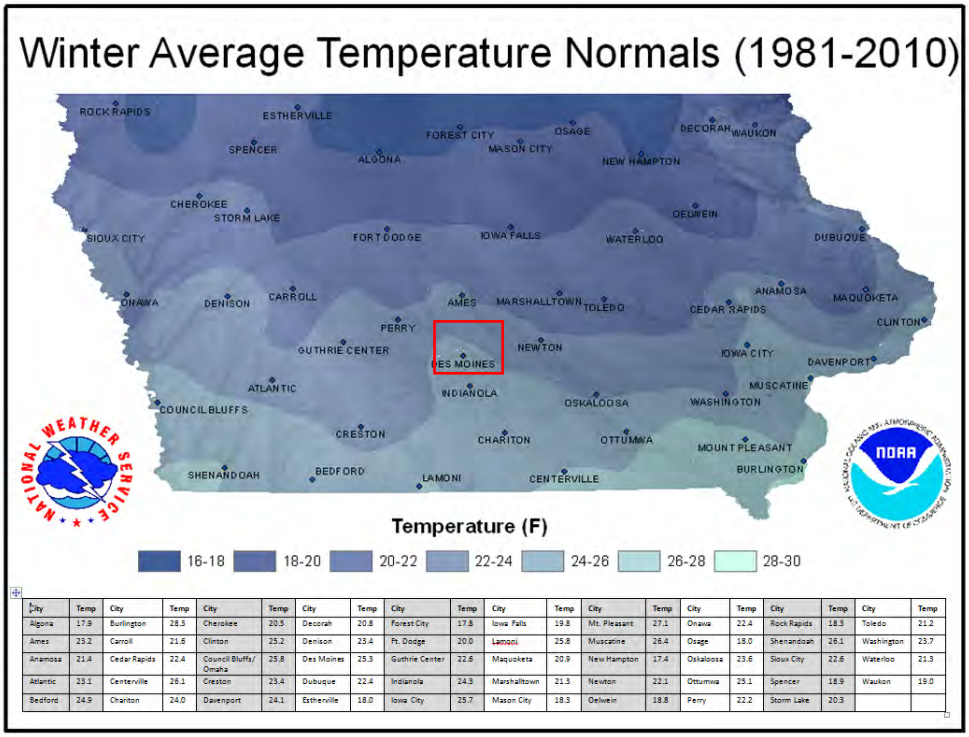


Source: National Weather Service: https://www.weather.gov/safety/cold-wind-chill-chart

The latest 30-year climate normals (1981-2010) developed by the National Weather Service show that during the winter months (December, January, and February) the average temperature in Polk County is approximately 22-26 ºF. Generally, the southern half of the county is, on average, a few degrees warmer during the winter months than the norther half. The average temperature in Des Moines during the winter months is 25.3 ºF. The coldest temperature recorded in Polk County occurred in February 1996 when the temperature in Ankeny dropped to -34 ºF.[53]

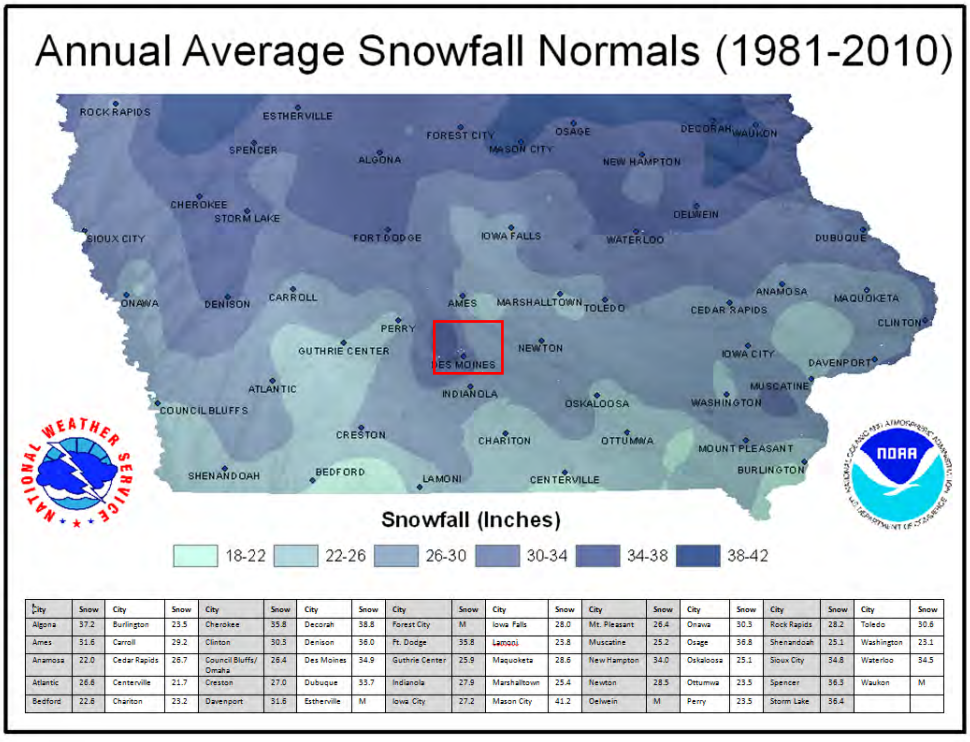
[53] US Department of Commerce, NOAA. "Climate." weather.gov. NOAA's National Weather Service, March 29, 2024. https://www.weather.gov/wrh/climate?wfo=dmx.

Figure 115. Iowa Winter Average Temperature Normals (1981 - 2010)



City	Temp	City	Temp	City	Temp	City	Temp	City	Temp	City	Temp	City	Temp	City	Temp	City	Temp	City	Temp
Algona	17.9	Burlington	28.5	Cherokee	20.5	Decorah	20.8	Forest City	17.8	Iowa Falls	19.8	Mt. Pleasant	27.1	Onawa	22.4	Rock Rapids	18.5	Toledo	21.2
Ames	23.2	Carroll	21.6	Clinton	25.2	Denison	23.4	Ft. Dodge	20.0	Lamoni	25.8	Muscatine	26.4	Osage	18.0	Shenandoah	26.1	Washington	23.7
Anamosa	21.4	Cedar Rapids	22.4	Council Bluffs/ Omaha	25.8	Des Moines	25.3	Guthrie Center	22.6	Maquoketa	20.9	New Hampton	17.4	Oskaloosa	23.6	Sioux City	22.6	Waterloo	21.3
Atlantic	23.1	Centerville	26.1	Creston	23.4	Dubuque	22.4	Indianola	24.3	Marshalltown	21.3	Newton	22.1	Ottumwa	25.1	Spencer	18.9	Waukon	19.0
Bedford	24.9	Chariton	24.0	Davenport	24.1	Estherville	18.0	Iowa City	25.7	Mason City	18.3	Oelwein	18.8	Perry	22.2	Storm Lake	20.3		

Figure 116. Iowa Annual Average Snowfall Normals (1981 - 2010)



City	Snow	City	Snow	City	Snow	City	Snow	City	Snow	City	Snow	City	Snow	City	Snow	City	Snow	City	Snow
Algona	37.2	Burlington	23.5	Cherokee	35.8	Decorah	38.8	Forest City	M	Iowa Falls	28.0	Mt. Pleasant	26.4	Onawa	30.3	Rock Rapids	28.2	Toledo	30.6
Ames	51.6	Carroll	29.2	Clinton	30.5	Denison	36.0	Ft. Dodge	35.8	Lamoni	23.8	Muscatine	25.2	Osage	36.8	Shenandoah	25.1	Washington	25.1
Anamosa	22.0	Cedar Rapids	26.7	Council Bluffs/ Omaha	26.4	Des Moines	34.9	Guthrie Center	25.9	Maquoketa	28.6	New Hampton	34.0	Oskaloosa	25.1	Sioux City	34.8	Waterloo	34.5
Atlantic	26.8	Centerville	21.7	Creston	27.0	Dubuque	33.7	Indianola	27.9	Marshalltown	25.4	Newton	28.5	Ottumwa	23.5	Spencer	36.3	Waukon	M
Bedford	22.6	Chariton	23.2	Davenport	31.6	Estherville	M	Iowa City	27.2	Mason City	41.2	Oelwein	M	Perry	23.5	Storm Lake	36.4		

According to the latest available 30-year climate normals (1981-2010) developed by the National Weather Service, Polk County typically receives 26-38 inches of snow; annual snowfall totals in the western part of Polk County tend to be towards the higher end of the range (34-38 inches), while the eastern portion usually experiences snowfall totals at the lower end (26-30 inches) of the spectrum. The annual average snowfall for Des Moines is 34.9 inches. The largest individual snowfall recorded in the Des Moines area came on New Year's Day in 1942 when 19.8 inches of snow fell in Des Moines in a 24 hour period.

3.3.23.4 PAST OCCURRENCES

According to the latest National Weather Service 30-year estimates (1981-2010) for Des Moines, the winter high temperature normal is 33.6 ºF, and the winter low temperature normal is 17 ºF. and the annual average snowfall is 34.9 inches. The national Centers for Environmental Information identifies 104 instances of hazards associated with winter weather (defined in the "Description" section of this hazard profile) between January 1, 1980 and December 31, 2023. These events resulted in approximately $14,727,798 worth of damage and 2 fatalities. Winter storms, which are events where multiple winter hazards are present, were the most frequent winter weather event to impact Polk County, and this is evidence that many winter hazards occur as part of the same system. Heavy snow is identified as the most common winter hazard to occur alone in the planning area.

Table 126. NCEI Winter Weather Hazards in Polk County 1980 - 2023

Event Type	Count	Total Property Damage	Total Crop Damage	Total Injuries	Total Deaths
Winter storm	28	$829,900	$0	0	1
Ice storm	11	$658,330	$0	0	0
Heavy snow	26	$3,910,450	$2,600,000	0	0
Frost/freeze	9	$0	$4,000,000	0	0
Cold/windchill	8	$0	$294,118	0	0
Extreme cold/windchill	9	$0	$0	0	1
Blizzard	13	$2,435,000	$0	0	0
TOTALS	**104**	**$7,833,680**	**$6,894,118**	**0**	**2**

Historically, there have been two Presidential Disaster Declarations for Severe Winter Storm that included Polk County. The first declaration occurred in 1997, and the second declaration came 10

years later in 2007. Interestingly, both declarations occurred outside of the traditional winter season of December – February.

Table 127. FEMA Disaster Declarations Pertaining to Winter Weather in Polk County

Disaster Number	Declaration Date	Description
1688	03/14/2007	Severe winter storms
1191	11/20/1997	Severe snow storms

3.3.23.5 PROBABILITY OF FUTURE OCCURRENCE

With 104 instances of winter hazards impacting Polk County recorded over over the past 44 years (1980 – 2024), the avearge number of winter hazards per year is approximately 2.4. Future instances of winter hazards impacting Polk County should be expected, and at least once instance has been recorded in each year since 1996 with the exception of 2006. The probability of winter storms in Polk County is considered “highly likely” in a given year.

3.3.23.6 VULNERABILITY AND IMPACTS

Winter storms and severe winter weather can impact the planning area in a variety of ways. The specific impacts this hazard are described in the following table. All jurisdictions in Polk County are equally vulnerable to this hazard.

Table 128. Potential Impacts of Winter Storm on Community Lifelines

Lifelines	Impact Type	Description
Safety & Security		The immediate threat to life due to extreme cold, icy conditions, and potential for accidents necessitates a robust emergency response, including rescue operations and law enforcement to manage traffic accidents and ensure public safety.
Health & Medical		Exposure to extreme cold can lead to hypothermia and frostbite, while slippery conditions increase the risk of falls and accidents. Healthcare facilities must be prepared for an influx of patients and potential challenges in maintaining operations during severe weather.

Lifelines	Impact Type	Description
Housing & Building Infrastructure		Heavy snowfall and ice can cause damage to roofs and structures. Ensuring that buildings are adequately insulated and heated is critical to prevent pipe freezing and to maintain safe living conditions.
Utilities		Winter storms can disrupt power, heating, and water services, as well as communication networks. Restoring these services is crucial for survival and comfort during extended cold periods.
Transportation		Snow and ice can severely impact road, air, and rail travel, leading to delays, accidents, and the need for extensive snow and ice removal efforts.

A) People

Extreme cold often accompanies severe winter storms and can lead to hypothermia and frostbite in people who are exposed to the weather without adequate clothing protection. When combined with high winds from winter storms, extreme cold becomes extreme wind chill, which is tremendously hazardous to health and safety. The National Institute on Aging estimates that more than 2.5 million Americans are especially vulnerable to hypothermia, with the isolated elderly being most at risk. About 10% of people over the age of 65 have some kind of temperature-regulating defect, and 3-4% of all hospital patients over 65 are hypothermic. Also at risk are those without shelter or who are stranded, or who live in a home that is poorly insulated or without heat. Emergency needs of remote or isolated residents for food or fuel, as well as for feed, water and shelter for livestock are unable to be met.

B) Structures

In general, structural impacts of winter weather hazards include damage to roofs and building frames, rather than building content. The weight of heavy snow and ice can cause damage to roofs and potentially result in structural collapse among buildings not adequately designed to withstand the added weight of snow and ice. Buildings with overhanging tree limbs are particularly vulnerable to damage during winter storms as tree limbs are prone to breaking off under the weight of snow and ice.

C) Systems

Winter storms can disrupt power, heating, and water services, as well as communication networks. Damage to these systems is typically caused by the weight of heavy snow and ice. High winds can also be damaging, especially if snow and ice already weigh down infrastructure such as power lines. Furthermore, tree branches can collapse under the weight of snow and ice, and this can damage utility lines and create obstacles on roads. Cold can cause fuel to congeal in storage tanks and supply lines, stopping electric generators. Cold temperatures can also overpower a building's heating system and cause water and sewer pipes to freeze and rupture.

Heavy snow and ice can bring a community to a standstill by inhibiting transportation. Ice can also become a problem on roadways if the air temperature is high enough so that precipitation falls as freezing rain rather than snow. Even small accumulations of ice can be extremely dangerous to motorists and pedestrians. About 70 percent of winter-related deaths occur in automobiles due to traffic accidents and about 25 percent are from people caught outside in a storm. Emergency services such as police, fire, and ambulance may be delayed or unable to respond due to road conditions. Bridges and overpasses are particularly dangerous because they freeze before other surfaces. Repair and snow removal costs can be significant.

D) Natural, Historic, and Cultural Resources

There are few vulnerabilities to natural resources from winter weather hazards; heavy snow and ice accumulation can potentially bring down large tree limbs, and freezing temperatures can potentially delay the start of the growing season. A cold snap can also be deadly for crops which have already been planted in the ground. According to the U.S. Department of Agriculture, temperatures at or below 24 ºF can cause heavy damage to most plants. At these temperatures, the ground freezes solid, with the depth of the frozen ground dependent on the duration and severity of the freeze, soil moisture, and soil type.

E) Community Activities

Severe winter weather has the potential to immobilize the region causing cancellations of planned events or activities. This is typically short lived, although longer disruptions may occur if heavy snowfall damages structures and/or disrupts utilities which are necessary for community activities.

Existing Development

Winter weather can impact existing development in several ways. Heavy snowfall accumulation can damage roofs and utility lines, and transportation routes can be partially or completely obstructed. Extreme cold can also cause liquid pipelines to freeze and potentially rupture. Concrete can also be damaged when water turns to ice because ice occupies a larger volume of space than water. Any moisture present in small cracks and crevices will expand when frozen, and this expansion can cause concrete to chip/break. Over time, this process can cause noticeable damage to concrete infrastructure, and this freeze-thaw cycle is one of the main causes of potholes in roads.

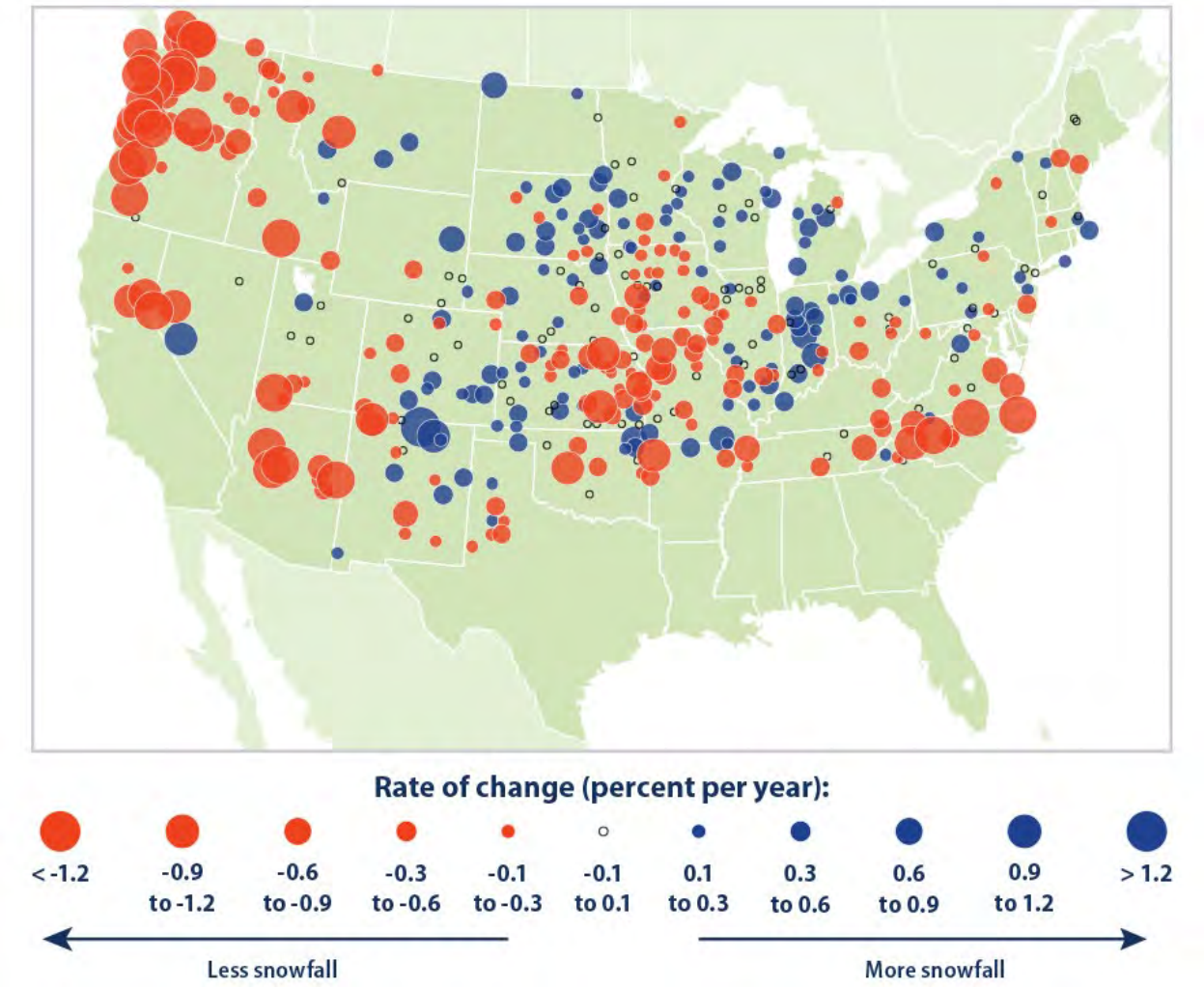
Future Development

Severe winter weather will continue to be a hazard to development as large changes in building techniques and material properties are not anticipated. Future development could potentially increase vulnerability to this hazard by increasing demand on the utilities and increasing the exposure of infrastructure networks.

Climate Change

As is the case with many hazards profiled in this plan, the relationship between winter weather hazards and climate change is an area of ongoing research. With regard to winter temperatures, there is evidence that winter temperatures are gradually rising. This may indicate that future occurrences of extreme cold will become less frequent. Warmer winters may cause the annual snow “season” to be shorter, although this does not necessarily imply overall snowfall in the planning area will be reduced. Analysis of weather station data from 1930 to 2007 by the U.S. EPA found that shifts in snowfall totals appear to vary by region. Figure 117 shows the changes to snowfall totals recorded by more than 419 weather stations. Polk County is encouraged to monitor this field for any forthcoming research which may help inform future decisions pertaining to mitigation of severe winter weather.

Figure 117. Change in Total Snowfall in the Contiguous 48 States, 1930–2007



Source: U.S. Environmental Protection Agency: https://www.epa.gov/climate-indicators/climate-change-indicators-snowfall

Hazard Risk Score

Table 129. Winter Storm Probability and Health Impact Ratings

Health Severity	Community Impact	Public Health System Impact	Healthcare System Impact	Total Health Hazard Score	Probability
2	4	2	3	11	Highly Likely

3.4 VULNERABILITY ASSESSMENT SUMMARY

The table below provides a summary of the implications of recent trends on vulnerability in Polk County, as described in further detail in each of the hazard profiles. It uses the following symbols to describe how each trend (climate changes, population pattern changes, and changes in land use and development) have increased risk in each participating jurisdiction for each hazard:

 Increased Risk

 No change to Risk

 Decreased Risk

Table 130. Summary of Trend Implications for Vulnerability to Profiled Hazards

Animal/Plant/Crop Disease			
Jurisdiction	**Changes in Climate**	**Changes in Population Patterns**	**Changes in Land Use and Development**
Polk County	↑	↑	↔
Alleman	↑	↓	↔
Altoona	↑	↑	↔
Ankeny	↑	↑	↔
Ankeny Community School District	↑	↔	↔
Bondurant	↑	↑	↔
Bondurant-Farrar Community School District	↑	↔	↔
Clive	↑	↑	↔
Delaware Township	↑	↔	↔
Des Moines	↑	↑	↔
Des Moines Independent School District	↑	↔	↔
Des Moines Water Works	↑	↔	↔
Elkhart	↑	↑	↔
Grimes	↑	↑	↔
Johnston	↑	↑	↔

Johnston Community School District	↑	↔	↔
Mitchellville	↑	↑	↔
North Polk Community School District	↑	↔	↔
Pleasant Hill	↑	↑	↔
Polk City	↑	↑	↔
Runnells	↑	↓	↔
Saylor Township	↑	↓	↔
Southeast Polk Community School District	↑	↔	↔
Urbandale	↑	↑	↔
Urbandale Community School District	↑	↔	↔
West Des Moines	↑	↑	↔
West Des Moines Community School District	↑	↔	↔
Windsor Heights	↑	↑	↔
Climate Change			
Jurisdiction	**Changes in Climate**	**Changes in Population Patterns**	**Changes in Land Use and Development**
Polk County	N/A	↑	↑
Alleman	N/A	↓	↔
Altoona	N/A	↑	↑
Ankeny	N/A	↑	↑

Ankeny Community School District	N/A		
Bondurant	N/A		
Bondurant-Farrar Community School District	N/A		
Clive	N/A		
Delaware Township	N/A		
Des Moines	N/A		
Des Moines Independent School District	N/A		
Des Moines Water Works	N/A		
Elkhart	N/A		
Grimes	N/A		
Johnston	N/A		
Johnston Community School District	N/A		
Mitchellville	N/A		
North Polk Community School District	N/A		
Pleasant Hill	N/A		
Polk City	N/A		
Runnells	N/A		
Saylor Township	N/A		
Southeast Polk Community School District	N/A		
Urbandale	N/A		

Urbandale Community School District	N/A	⟺	⟺
West Des Moines	N/A	↑	↑
West Des Moines Community School District	N/A	⟺	⟺
Windsor Heights	N/A	↑	↑
Cyberattack			
Jurisdiction	**Changes in Climate**	**Changes in Population Patterns**	**Changes in Land Use and Development**
Polk County	⟺	↑	↑
Alleman	⟺	↓	⟺
Altoona	⟺	↑	↑
Ankeny	⟺	↑	↑
Ankeny Community School District	⟺	⟺	⟺
Bondurant	⟺	↑	↑
Bondurant-Farrar Community School District	⟺	⟺	⟺
Clive	⟺	↑	↑
Delaware Township	⟺	⟺	⟺
Des Moines	⟺	↑	↑
Des Moines Independent School District	⟺	⟺	⟺
Des Moines Water Works	⟺	⟺	⟺
Elkhart	⟺	↑	↑
Grimes	⟺	↑	↑

Johnston	⟺	↑	↑
Johnston Community School District	⟺	⟺	⟺
Mitchellville	⟺	↑	↑
North Polk Community School District	⟺	⟺	⟺
Pleasant Hill	⟺	↑	↑
Polk City	⟺	↑	↑
Runnells	⟺	↓	⟺
Saylor Township	⟺	↓	⟺
Southeast Polk Community School District	⟺	⟺	⟺
Urbandale	⟺	↑	↑
Urbandale Community School District	⟺	⟺	⟺
West Des Moines	⟺	↑	↑
West Des Moines Community School District	⟺	⟺	⟺
Windsor Heights	⟺	↑	↑
Dam Failure			
Jurisdiction	**Changes in Climate**	**Changes in Population Patterns**	**Changes in Land Use and Development**
Polk County	⟺	↑	↑
Alleman	⟺	⟺	⟺
Altoona	⟺	⟺	⟺
Ankeny	⟺	⟺	⟺

Ankeny Community School District			
Bondurant			
Bondurant-Farrar Community School District			
Clive			
Delaware Township			
Des Moines			
Des Moines Independent School District			
Des Moines Water Works			
Elkhart			
Grimes			
Johnston			
Johnston Community School District			
Mitchellville			
North Polk Community School District			
Pleasant Hill			
Polk City			
Runnells			
Saylor Township			
Southeast Polk Community School District			
Urbandale			

Urbandale Community School District	⟺	⟺	⟺
West Des Moines	⟺	↑	↑
West Des Moines Community School District	⟺	⟺	⟺
Windsor Heights	⟺	↑	↑
Drought			
Jurisdiction	**Changes in Climate**	**Changes in Population Patterns**	**Changes in Land Use and Development**
Polk County	↑	↑	⟺
Alleman	↑	↓	⟺
Altoona	↑	↑	⟺
Ankeny	↑	↑	⟺
Ankeny Community School District	↑	⟺	⟺
Bondurant	↑	↑	⟺
Bondurant-Farrar Community School District	↑	⟺	⟺
Clive	↑	↑	⟺
Delaware Township	↑	⟺	⟺
Des Moines	↑	↑	⟺
Des Moines Independent School District	↑	⟺	⟺
Des Moines Water Works	↑	⟺	⟺
Elkhart	↑	↑	⟺
Grimes	↑	↑	⟺

Johnston			
Johnston Community School District			
Mitchellville			
North Polk Community School District			
Pleasant Hill			
Polk City			
Runnells			
Saylor Township			
Southeast Polk Community School District			
Urbandale			
Urbandale Community School District			
West Des Moines			
West Des Moines Community School District			
Windsor Heights			
Earthquake			
Jurisdiction	**Changes in Climate**	**Changes in Population Patterns**	**Changes in Land Use and Development**
Polk County			
Alleman			
Altoona			
Ankeny			

Ankeny Community School District			
Bondurant			
Bondurant-Farrar Community School District			
Clive			
Delaware Township			
Des Moines			
Des Moines Independent School District			
Des Moines Water Works			
Elkhart			
Grimes			
Johnston			
Johnston Community School District			
Mitchellville			
North Polk Community School District			
Pleasant Hill			
Polk City			
Runnells			
Saylor Township			
Southeast Polk Community School District			
Urbandale			

Urbandale Community School District	⟺	⟺	⟺
West Des Moines	⟺	↑	↑
West Des Moines Community School District	⟺	⟺	⟺
Windsor Heights	⟺	↑	↑
Expansive Soils			
Jurisdiction	**Changes in Climate**	**Changes in Population Patterns**	**Changes in Land Use and Development**
Polk County	⟺	↑	↑
Alleman	⟺	↓	⟺
Altoona	⟺	↑	↑
Ankeny	⟺	↑	↑
Ankeny Community School District	⟺	⟺	⟺
Bondurant	⟺	↑	↑
Bondurant-Farrar Community School District	⟺	⟺	⟺
Clive	⟺	↑	↑
Delaware Township	⟺	⟺	⟺
Des Moines	⟺	↑	↑
Des Moines Independent School District	⟺	⟺	⟺
Des Moines Water Works	⟺	⟺	⟺
Elkhart	⟺	↑	↑
Grimes	⟺	↑	↑

Johnston	⟺	↑	↑
Johnston Community School District	⟺	⟺	⟺
Mitchellville	⟺	↑	↑
North Polk Community School District	⟺	⟺	⟺
Pleasant Hill	⟺	↑	↑
Polk City	⟺	↑	↑
Runnells	⟺	↓	⟺
Saylor Township	⟺	↓	⟺
Southeast Polk Community School District	⟺	⟺	⟺
Urbandale	⟺	↑	↑
Urbandale Community School District	⟺	⟺	⟺
West Des Moines	⟺	↑	↑
West Des Moines Community School District	⟺	⟺	⟺
Windsor Heights	⟺	↑	↑
Extreme Temperatures			
Jurisdiction	**Changes in Climate**	**Changes in Population Patterns**	**Changes in Land Use and Development**
Polk County	↑	↑	⟺
Alleman	↑	↓	⟺
Altoona	↑	↑	⟺
Ankeny	↑	↑	⟺

Ankeny Community School District			
Bondurant			
Bondurant-Farrar Community School District			
Clive			
Delaware Township			
Des Moines			
Des Moines Independent School District			
Des Moines Water Works			
Elkhart			
Grimes			
Johnston			
Johnston Community School District			
Mitchellville			
North Polk Community School District			
Pleasant Hill			
Polk City			
Runnells			
Saylor Township			
Southeast Polk Community School District			
Urbandale			

Urbandale Community School District			
West Des Moines			
West Des Moines Community School District			
Windsor Heights			
Flash Flooding			
Jurisdiction	**Changes in Climate**	**Changes in Population Patterns**	**Changes in Land Use and Development**
Polk County			
Alleman			
Altoona			
Ankeny			
Ankeny Community School District			
Bondurant			
Bondurant-Farrar Community School District			
Clive			
Delaware Township			
Des Moines			
Des Moines Independent School District			
Des Moines Water Works			
Elkhart			
Grimes			

Johnston			
Johnston Community School District			
Mitchellville			
North Polk Community School District			
Pleasant Hill			
Polk City			
Runnells			
Saylor Township			
Southeast Polk Community School District			
Urbandale			
Urbandale Community School District			
West Des Moines			
West Des Moines Community School District			
Windsor Heights			
Grass or Wildland Fire			
Jurisdiction	**Changes in Climate**	**Changes in Population Patterns**	**Changes in Land Use and Development**
Polk County			
Alleman			
Altoona			
Ankeny			

Ankeny Community School District			
Bondurant			
Bondurant-Farrar Community School District			
Clive			
Delaware Township			
Des Moines			
Des Moines Independent School District			
Des Moines Water Works			
Elkhart			
Grimes			
Johnston			
Johnston Community School District			
Mitchellville			
North Polk Community School District			
Pleasant Hill			
Polk City			
Runnells			
Saylor Township			
Southeast Polk Community School District			
Urbandale			

Urbandale Community School District	↑	↔	↔
West Des Moines	↑	↑	↑
West Des Moines Community School District	↑	↔	↔
Windsor Heights	↑	↑	↑
Hazardous Materials Incident			
Jurisdiction	**Changes in Climate**	**Changes in Population Patterns**	**Changes in Land Use and Development**
Polk County	↔	↑	↑
Alleman	↔	↓	↔
Altoona	↔	↑	↑
Ankeny	↔	↑	↑
Ankeny Community School District	↔	↔	↔
Bondurant	↔	↑	↑
Bondurant-Farrar Community School District	↔	↔	↔
Clive	↔	↑	↑
Delaware Township	↔	↔	↔
Des Moines	↔	↑	↑
Des Moines Independent School District	↔	↔	↔
Des Moines Water Works	↔	↔	↔
Elkhart	↔	↑	↑
Grimes	↔	↑	↑

Johnston	⇔	↑	↑
Johnston Community School District	⇔	⇔	⇔
Mitchellville	⇔	↑	↑
North Polk Community School District	⇔	⇔	⇔
Pleasant Hill	⇔	↑	↑
Polk City	⇔	↑	↑
Runnells	⇔	↓	⇔
Saylor Township	⇔	↓	⇔
Southeast Polk Community School District	⇔	⇔	⇔
Urbandale	⇔	↑	↑
Urbandale Community School District	⇔	⇔	⇔
West Des Moines	⇔	↑	↑
West Des Moines Community School District	⇔	⇔	⇔
Windsor Heights	⇔	↑	↑
Human Disease			
Jurisdiction	**Changes in Climate**	**Changes in Population Patterns**	**Changes in Land Use and Development**
Polk County	⇔	↑	⇔
Alleman	⇔	↓	⇔
Altoona	⇔	↑	⇔
Ankeny	⇔	↑	⇔

Ankeny Community School District			
Bondurant			
Bondurant-Farrar Community School District			
Clive			
Delaware Township			
Des Moines			
Des Moines Independent School District			
Des Moines Water Works			
Elkhart			
Grimes			
Johnston			
Johnston Community School District			
Mitchellville			
North Polk Community School District			
Pleasant Hill			
Polk City			
Runnells			
Saylor Township			
Southeast Polk Community School District			
Urbandale			

Urbandale Community School District	⟷	⟷	⟷
West Des Moines	⟷	↑	⟷
West Des Moines Community School District	⟷	⟷	⟷
Windsor Heights	⟷	↑	⟷
Infrastructure Failure			
Jurisdiction	**Changes in Climate**	**Changes in Population Patterns**	**Changes in Land Use and Development**
Polk County	⟷	↑	↑
Alleman	⟷	↓	⟷
Altoona	⟷	↑	↑
Ankeny	⟷	↑	↑
Ankeny Community School District	⟷	⟷	⟷
Bondurant	⟷	↑	↑
Bondurant-Farrar Community School District	⟷	⟷	⟷
Clive	⟷	↑	↑
Delaware Township	⟷	⟷	⟷
Des Moines	⟷	↑	↑
Des Moines Independent School District	⟷	⟷	⟷
Des Moines Water Works	⟷	⟷	⟷
Elkhart	⟷	↑	↑

Grimes			
Johnston			
Johnston Community School District			
Mitchellville			
North Polk Community School District			
Pleasant Hill			
Polk City			
Runnells			
Saylor Township			
Southeast Polk Community School District			
Urbandale			
Urbandale Community School District			
West Des Moines			
West Des Moines Community School District			
Windsor Heights			
Levee Failure			
Jurisdiction	**Changes in Climate**	**Changes in Population Patterns**	**Changes in Land Use and Development**
Polk County			
Alleman			

Altoona	⟺	⟺	⟺
Ankeny	⟺	⟺	⟺
Ankeny Community School District	⟺	⟺	⟺
Bondurant	⟺	⟺	⟺
Bondurant-Farrar Community School District	⟺	⟺	⟺
Clive	⟺	⟺	⟺
Delaware Township	⟺	⟺	⟺
Des Moines	⟺	↑	↑
Des Moines Independent School District	⟺	⟺	⟺
Des Moines Water Works	⟺	⟺	⟺
Elkhart	⟺	⟺	⟺
Grimes	⟺	⟺	⟺
Johnston	⟺	⟺	⟺
Johnston Community School District	⟺	⟺	⟺
Mitchellville	⟺	⟺	⟺
North Polk Community School District	⟺	⟺	⟺
Pleasant Hill	⟺	↑	↑
Polk City	⟺	⟺	⟺
Runnells	⟺	⟺	⟺

Saylor Township	⟷	⟷	⟷
Southeast Polk Community School District	⟷	⟷	⟷
Urbandale	⟷	⟷	⟷
Urbandale Community School District	⟷	⟷	⟷
West Des Moines	⟷	↑	↑
West Des Moines Community School District	⟷	⟷	⟷
Windsor Heights	⟷	⟷	⟷
River Flooding			
Jurisdiction	**Changes in Climate**	**Changes in Population Patterns**	**Changes in Land Use and Development**
Polk County	↑	↑	↑
Alleman	↑	↓	⟷
Altoona	↑	↑	↑
Ankeny	↑	↑	↑
Ankeny Community School District	↑	⟷	⟷
Bondurant	↑	↑	↑
Bondurant-Farrar Community School District	↑	⟷	⟷
Clive	↑	↑	↑
Delaware Township	↑	⟷	⟷
Des Moines	↑	↑	↑

Des Moines Independent School District			
Des Moines Water Works			
Elkhart			
Grimes			
Johnston			
Johnston Community School District			
Mitchellville			
North Polk Community School District			
Pleasant Hill			
Polk City			
Runnells			
Saylor Township			
Southeast Polk Community School District			
Urbandale			
Urbandale Community School District			
West Des Moines			
West Des Moines Community School District			
Windsor Heights			
Sinkholes/Landslides			

Jurisdiction	Changes in Climate	Changes in Population Patterns	Changes in Land Use and Development
Polk County	⟷	↑	↑
Alleman	⟷	↓	⟷
Altoona	⟷	↑	↑
Ankeny	⟷	↑	↑
Ankeny Community School District	⟷	⟷	⟷
Bondurant	⟷	↑	↑
Bondurant-Farrar Community School District	⟷	⟷	⟷
Clive	⟷	↑	↑
Delaware Township	⟷	⟷	⟷
Des Moines	⟷	↑	↑
Des Moines Independent School District	⟷	⟷	⟷
Des Moines Water Works	⟷	⟷	⟷
Elkhart	⟷	↑	↑
Grimes	⟷	↑	↑
Johnston	⟷	↑	↑
Johnston Community School District	⟷	⟷	⟷
Mitchellville	⟷	↑	↑
North Polk Community School District	⟷	⟷	⟷
Pleasant Hill	⟷	↑	↑
Polk City	⟷	↑	↑

Runnells	⟺	↓	⟺
Saylor Township	⟺	↓	⟺
Southeast Polk Community School District	⟺	⟺	⟺
Urbandale	⟺	↑	↑
Urbandale Community School District	⟺	⟺	⟺
West Des Moines	⟺	↑	↑
West Des Moines Community School District	⟺	⟺	⟺
Windsor Heights	⟺	↑	↑
Structural Fire			
Jurisdiction	**Changes in Climate**	**Changes in Population Patterns**	**Changes in Land Use and Development**
Polk County	⟺	↑	↑
Alleman	⟺	↓	⟺
Altoona	⟺	↑	↑
Ankeny	⟺	↑	↑
Ankeny Community School District	⟺	⟺	⟺
Bondurant	⟺	↑	↑
Bondurant-Farrar Community School District	⟺	⟺	⟺
Clive	⟺	↑	↑
Delaware Township	⟺	⟺	⟺
Des Moines	⟺	↑	↑

Des Moines Independent School District			
Des Moines Water Works			
Elkhart			
Grimes			
Johnston			
Johnston Community School District			
Mitchellville			
North Polk Community School District			
Pleasant Hill			
Polk City			
Runnells			
Saylor Township			
Southeast Polk Community School District			
Urbandale			
Urbandale Community School District			
West Des Moines			
West Des Moines Community School District			
Windsor Heights			

Thunderstorm with Lightning and Hail			
Jurisdiction	**Changes in Climate**	**Changes in Population Patterns**	**Changes in Land Use and Development**
Polk County	↑	↑	↑
Alleman	↑	↓	↔
Altoona	↑	↑	↑
Ankeny	↑	↑	↑
Ankeny Community School District	↑	↔	↔
Bondurant	↑	↑	↑
Bondurant-Farrar Community School District	↑	↔	↔
Clive	↑	↑	↑
Delaware Township	↑	↔	↔
Des Moines	↑	↑	↑
Des Moines Independent School District	↑	↔	↔
Des Moines Water Works	↑	↔	↔
Elkhart	↑	↑	↑
Grimes	↑	↑	↑
Johnston	↑	↑	↑
Johnston Community School District	↑	↔	↔
Mitchellville	↑	↑	↑
North Polk Community School District	↑	↔	↔
Pleasant Hill	↑	↑	↑

Polk City			
Runnells			
Saylor Township			
Southeast Polk Community School District			
Urbandale			
Urbandale Community School District			
West Des Moines			
West Des Moines Community School District			
Windsor Heights			
Tornado			
Jurisdiction	**Changes in Climate**	**Changes in Population Patterns**	**Changes in Land Use and Development**
Polk County			
Alleman			
Altoona			
Ankeny			
Ankeny Community School District			
Bondurant			
Bondurant-Farrar Community School District			
Clive			
Delaware Township			

Des Moines			
Des Moines Independent School District			
Des Moines Water Works			
Elkhart			
Grimes			
Johnston			
Johnston Community School District			
Mitchellville			
North Polk Community School District			
Pleasant Hill			
Polk City			
Runnells			
Saylor Township			
Southeast Polk Community School District			
Urbandale			
Urbandale Community School District			
West Des Moines			
West Des Moines Community School District			
Windsor Heights			

Transportation Incident			
Jurisdiction	**Changes in Climate**	**Changes in Population Patterns**	**Changes in Land Use and Development**
Polk County	⟺	↑	↑
Alleman	⟺	↑	⟺
Altoona	⟺	↑	↑
Ankeny	⟺	↑	↑
Ankeny Community School District	⟺	⟺	⟺
Bondurant	⟺	↑	↑
Bondurant-Farrar Community School District	⟺	⟺	⟺
Clive	⟺	↑	↑
Delaware Township	⟺	⟺	⟺
Des Moines	⟺	↑	↑
Des Moines Independent School District	⟺	⟺	⟺
Des Moines Water Works	⟺	⟺	⟺
Elkhart	⟺	↑	↑
Grimes	⟺	↑	↑
Johnston	⟺	↑	↑
Johnston Community School District	⟺	⟺	⟺
Mitchellville	⟺	↑	↑
North Polk Community School District	⟺	⟺	⟺
Pleasant Hill	⟺	↑	↑

Polk City	⟺	↑	↑
Runnells	⟺	↓	↑
Saylor Township	⟺	↓	↑
Southeast Polk Community School District	⟺	⟺	⟺
Urbandale	⟺	↑	↑
Urbandale Community School District	⟺	⟺	⟺
West Des Moines	⟺	↑	↑
West Des Moines Community School District	⟺	⟺	⟺
Windsor Heights	⟺	↑	↑

Windstorm

Jurisdiction	Changes in Climate	Changes in Population Patterns	Changes in Land Use and Development
Polk County	⟺	↑	↑
Alleman	⟺	↓	⟺
Altoona	⟺	↑	↑
Ankeny	⟺	↑	↑
Ankeny Community School District	⟺	⟺	⟺
Bondurant	⟺	↑	↑
Bondurant-Farrar Community School District	⟺	⟺	⟺
Clive	⟺	↑	↑
Delaware Township	⟺	⟺	⟺

Des Moines			
Des Moines Independent School District			
Des Moines Water Works			
Elkhart			
Grimes			
Johnston			
Johnston Community School District			
Mitchellville			
North Polk Community School District			
Pleasant Hill			
Polk City			
Runnells			
Saylor Township			
Southeast Polk Community School District			
Urbandale			
Urbandale Community School District			
West Des Moines			
West Des Moines Community School District			

Windsor Heights			
Winter Storm			
Jurisdiction	**Changes in Climate**	**Changes in Population Patterns**	**Changes in Land Use and Development**
Polk County			
Alleman			
Altoona			
Ankeny			
Ankeny Community School District			
Bondurant			
Bondurant-Farrar Community School District			
Clive			
Delaware Township			
Des Moines			
Des Moines Independent School District			
Des Moines Water Works			
Elkhart			
Grimes			
Johnston			
Johnston Community School District			
Mitchellville			

North Polk Community School District			
Pleasant Hill			
Polk City			
Runnells			
Saylor Township			
Southeast Polk Community School District			
Urbandale			
Urbandale Community School District			
West Des Moines			
West Des Moines Community School District			
Windsor Heights			

3.5 CONSEQUENCE ANALYSIS SUMMARY

This section considers and articulates the impact of each hazard profiled in the Polk County, Iowa Hazard Mitigation Plan. This consequence analysis applies equally to all municipalities and other jurisdictions that participate in this plan.

Table 131 – EMAP Consequence Analysis

Hazard	Impacts on:						
	The Public	Responders	Continuity of Government	Property, Facilities, and Infrastructure	Environment	Economic Condition of the Jurisdiction	Public Confidence in the Jurisdiction's Governance
Animal, Plant, and Crop Disease	The greatest potential consequence for the public of animal, plant, or crop disease is the food supply chain disruption that would occur if a crop or herd were infected with disease.	Impacts of animal, plant, and crop disease on responders are minimal.	Animal, Plant, and Crop diseases are not expected to impact continuity of government.	Animal, Plant, and Crop diseases are not expected to impact property, facilities, and infrastructure.	Animal, Plant, and Crop diseases can spread from domesticated to wild animals and plants, causing widespread damage. Animal and plant diseases have the potential to wipe out entire populations of animals and plants under the right circumstances.	The greatest potential consequence for the economy of animal, plant, or crop disease is agricultural loss, which can be significant. Destroying unhealthy plants and animals can cause significant financial strain for agricultural interests.	Public confidence in governance would be minimally impacted by an outbreak of animal, plant, or crop disease that is short term in nature. However, significant or longer-term food supply impacts may erode public trust in government.
Climate Change	While climate change does not pose a *direct* threat to the public, it threatens to increase the severity of drought, extreme temperature, flooding, flash flooding, grass or wildland fire, river flooding, thunderstorm, tornado, windstorm, and winter storms.	While climate change does not pose a *direct* threat to responders, it threatens to increase the severity of drought, extreme temperature, flooding, flash flooding, grass or wildland fire, river flooding, thunderstorm, tornado, windstorm, and winter storms. See relevant sections of this table for more information.	While climate change does not pose a *direct* threat to continuity of government, it threatens to increase the severity of drought, extreme temperature, flooding, flash flooding, grass or wildland fire, river flooding, thunderstorm, tornado, windstorm, and winter storms. See relevant sections of this	While climate change does not pose a *direct* threat to property, it threatens to increase the severity of drought, extreme temperature, flooding, flash flooding, grass or wildland fire, river flooding, thunderstorm, tornado, windstorm, and winter storms. See relevant sections of this table for more information.	Climate change is expected to negatively impact a wide variety of species of animals and plants, through reduction of suitable ecosystems to sustain them, changes to seasons that their life cycles depend on, and impacts to other species in their food chains.	While climate change does not pose a *direct* threat to the economy, it threatens to increase the severity of drought, extreme temperature, flooding, flash flooding, grass or wildland fire, river flooding, thunderstorm, tornado, windstorm, and winter storms.	Public trust in government could be negatively impacted by climate change if members of the public believe that any impacts could have been avoided if the government had taken different action(s) to prevent them.

Hazard	Impacts on:						
	The Public	Responders	Continuity of Government	Property, Facilities, and Infrastructure	Environment	Economic Condition of the Jurisdiction	Public Confidence in the Jurisdiction's Governance
	See relevant sections of this table for more information.		table for more information.			See relevant sections of this table for more information.	
Cyber Attack	The public faces significant consequences from cyber-attacks, which often target personal consumer information. Those impacts range from inconvenience to identity theft and direct financial loss.	Impacts of cyber-attack on responders are minimal, unless that cyber-attack targeted a piece of infrastructure (see "infrastructure failure") or a critical facility like a fire or police station.	Cyber-attacks can significantly impede continuity of government when targeting government systems. Many American municipalities have been functionally shut down for days by hostile actors committing cyber-attacks.	Impacts of cyber-attack on property and infrastructure are minimal, unless that directly targeting a piece of infrastructure (see "infrastructure failure").	Cyber-attacks are not expected to have an impact on the environment.	Most cyber-attacks target individual people or companies, and do not have an impact on the economy. However, an attack targeting a piece of infrastructure could lead to infrastructure failure with wide economic consequences (see "infrastructure failure").	Cyber-attacks (if directed at government infrastructure or services) could negatively impact public confidence in government if they believe that additional action should have been taken to prevent or respond to the event.
Dam Failure	More than 40% of the population of Polk County lives in the inundation zones of the twelve high-hazard dams in Polk County, and a dam failure has the potential to cause widespread injury and fatality among this population, even though such a failure is unlikely.	Dam failure's primary impact is flooding, which can wash out roads and bridges and cause hazardous conditions for first responders. Those located directly in inundation zones are also vulnerably to physical injury or death in the event of failure.	Failure of a high hazard dam could damage government facilities, including some fire stations, EOCs, and police stations. It would also lead to likely long-term power outages in the affected area, both of which would impact the ability to continue delivering government services.	Significant and widespread damage to property, facilities, and infrastructure would occur in the event of a high hazard dam failure. The primary consequence would be due to flooding; see "flooding" for more information.	Potential environmental impacts of dam failure include damage to trees and vegetation, the loss of lake ecosystems and habitats, and the release of hazardous materials into the environment and waterways.	Large-scale dam failure would cause significant economic impacts. Property damage would occur at many residences that are not covered by flood insurance, due to their location outside of the mapped SFHA. See "flooding" for more information.	If a high hazard dam were to fail, erosion of public trust would be expected, as the public is likely to blame the government for failing to maintain infrastructure and prevent the hazard from occurring.
Drought	Consequences of drought on the public are typically indirect. Members of the public involved in	Responders generally will not be directly impacted by drought. Possible reductions of water for firefighting purposes in	The county is unlikely to experience issues continuing operations and delivering services during drought.	Persistent drought can directly impact the water and wastewater, energy, and agriculture sectors, which could	Environmental consequences of drought are significant, as it reduces the	Drought has moderate potential to impact the economy in Polk County, given its agricultural interests,	Public confidence in government will likely not be impacted by a drought event.

DRAFT

Hazard	Impacts on:						
	The Public	Responders	Continuity of Government	Property, Facilities, and Infrastructure	Environment	Economic Condition of the Jurisdiction	Public Confidence in the Jurisdiction's Governance
	farming will be the most directly impacted by drought. If farms do not produce crops, the food supply is impacted. If water restrictions are implemented by government, residential lawns and gardens will be impacted in addition to agricultural interests.	extreme instances when supplemental water sources are not available could create operational stress and risk for firefighters.	DRAFT	cause cascading impacts to other sectors.	availability of water, reduces crop yields, & impacts ecosystems. Drought can also impact the spread of crop and animal diseases and pests.	particularly in extreme cases if major restrictions on water were to be placed on individuals and businesses.	Droughts are common in Iowa.
Earthquakes	Consequences to the public from a significant earthquake are numerous. Life safety would be at significant risk from building collapse. Homes and businesses could be destroyed, roadways and bridges could fail, and power, water, and sewer services may take months to restore.	Responders would face unique consequences from an earthquake event. Earthquakes can damage bridges and roadways, cause land to liquefy, spark fires, and damage hazardous material tanks. This could affect the availability of communications, power, water, or sewer, and responders may not be able to access impacted areas.	A major earthquake could directly impact or damage EOCs and other critical facilities, which could necessitate moving operations to alternate locations. Extended power outages and other utility disruptions would also impact continuity of operations.	Earthquakes have the potential to cause catastrophic consequence for property, facilities, and infrastructure, up to and including widespread structural collapses and road closures.	Environmental consequences from earthquakes are numerous. The ground motion and soil type may cause the ground to liquefy, causing underground storage tanks to surface or fail. Hazardous materials spills are common during earthquakes. In high magnitude earthquakes, trees will fall, underground pipes will break, and fires may spark, all impacting the environment.	The economy would be severely impacted by a major earthquake. Impacts to infrastructure would create significant challenges for companies doing business in and near Polk County.	Public confidence in government may suffer in the event of an earthquake. It may take several days or weeks to access the hardest hit areas. Debris may block roadways for weeks. Families may have to turn to public shelters if their homes are destroyed.

Hazard	Impacts on:						
	The Public	Responders	Continuity of Government	Property, Facilities, and Infrastructure	Environment	Economic Condition of the Jurisdiction	Public Confidence in the Jurisdiction's Governance
Expansive Soils	Expansive soils are not expected to directly negatively impact people, except for those who own homes that experience gradual damage.	Expansive soils are not expected to directly impact responders.	Polk County does not expect expansive soils to cause issues maintaining continuity of government.	Expansive soils can cause gradual damage to buildings and infrastructure, including eroded, cracked, or lifted, foundations, ruptured underground service lines, and increased settling of structures.	Environmental consequences of expansive soils are minimal.	The impact of expansive soils tends to be limited to individual residences, structures, or pieces of infrastructure, and is not expected to affect the economy.	Expansive soils are not expected to affect public confidence in the jurisdiction's governance.
Extreme Temperature	Extreme temperatures can create risks to human health and safety, and cause heat exhaustion, heat stroke, frostbite, and other injuries. Extreme temperature events can be particularly risky for the elderly, outdoor laborers, and residents without air conditioning or heat. Impacts of extreme temperatures can create stress on social service and medical providers.	Extreme temperatures can cause increased risk to responders based on physical exertion, protective gear, and the need for increased hydration. In extreme temperature conditions, caution should be exercised for first responders.	Extreme temperatures are unlikely to cause issues impacting continuing operations and delivering services unless they lead to extended electric utility outages.	Extreme temperatures place intense strain on the electrical grid and may cause or contribute to outages or blackouts, which can have cascading effects on all areas of critical infrastructure. Extreme cold can cause pipes to crack and break, resulting in water system leakages, water utility outages, and lack of fire suppression capabilities.	Extreme temperature events are not expected to have significant impacts on the environment.	Extreme temperatures early in the year can cause major damages to crops, impacting the local agricultural industry.	Public confidence in government will likely not be impacted by an extreme temperature event.
Flash Flooding	The public may face extreme consequences from flash floods. Floods have the potential to	Debris removal and emergency response costs from flash flooding can be significant. Responders may face extreme	Many access roads may be impacted by flooding, and in an extreme event, EOCs and other critical facilities may become	Flash flooding can cause widespread, significant damage to properties, facilities, and infrastructure. Property	Environmental consequences of flash flooding are significant. Flash flooding can cause	Flash flooding can have significant economic impacts, particularly in densely populated flash-flood-	Education and awareness are key components to maintaining public confidence in

DRAFT

Hazard	Impacts on:						
	The Public	Responders	Continuity of Government	Property, Facilities, and Infrastructure	Environment	Economic Condition of the Jurisdiction	Public Confidence in the Jurisdiction's Governance
	injure and kill people, especially those who drive through flooded roadways. Floods can destroy residences and businesses, and interrupt water, power, and sewer services necessary to return to a normal way of life. Whether residents have flood insurance or receive assistance or not, the recovery process from a flood may be costly and take weeks, months, or years to complete.	difficulties when responding to a flash flood event. Flash floods can destroy homes, businesses, and critical infrastructure such as EOCs, fire stations, and hospitals. Floods can wash out bridges and roadways, as well as destroy government buildings critical for response and recovery operations. Responders may have to perform swift water rescues to individuals trapped in flooded areas. Responders should be aware of their risks at all times.	inaccessible, even when not physically located in the SFHA. This may require municipal or county operations to move to alternate EOCs or function from secondary locations to maintain operations.	in the floodplain or other low-lying areas may be severely impacted or destroyed. Critical infrastructure like utilities, roadways, bridges, and Police, Fire, or EMS stations may be damaged or destroyed by floodwaters.	sediments to enter the waterways, clogging water management systems & waterways downstream. Flash floods can bring hazardous materials or pollution into waterways via runoff. Riparian ecosystems are negatively impacted with the introduction of sediments, pollutants & nutrients.	prone areas. The additional impact of flash flooding on transportation, agriculture, business continuity, and government services is substantial. Federal grants can aid in recovery efforts and alleviate the overall economic impact of flash flooding.	governance during a flash flood, especially when managing extended recovery timelines.
Grass or Wildland Fire	The public will feel the direct consequences of a wildfire if their home or place of employment is in the wildfire impact area. Homes and businesses may be destroyed in a fire, utility service could be interrupted, and access to roadways may be limited. The public may also be impacted by air	Responders will be directly impacted by a wildfire. Wildfires may change directions quickly as the wind and environmental elements change. Wildfires are often difficult to control and may take numerous resources to do so. Inhalation of fumes may pose a health risk to firefighters.	The county does not anticipate any issues maintaining operations and the delivery of services during a wildfire. In an event that directly impacts an EOC, temporarily operating from an alternate location may be required.	Property, facilities, and infrastructure in the wildfire zone will be significantly impacted. Homes and businesses may be destroyed in a fire, utility service could be interrupted, and access to roadways may be limited.	Although wildfires are a natural process, the environment may be negatively impacted. Not only are trees impacted by these fires, so are the native species of plants and animals. The smoke and ash from the fires can pollute waterways and our air.	If a large fire does occur and cannot be controlled quickly, there could be a significant economic effect due to widespread property damage and impacts to businesses and their operations.	Public confidence in government will likely not be impacted by a wildfire event.

DRAFT

Hazard	Impacts on:						
	The Public	Responders	Continuity of Government	Property, Facilities, and Infrastructure	Environment	Economic Condition of the Jurisdiction	Public Confidence in the Jurisdiction's Governance
	pollution from the wildfires.						
Hazardous Materials	The public could be immediately impacted by the consequences of a hazardous materials release, or spill. Hazmat releases can occur via many sources and in many locations including fixed facilities, roadway, and rail. The public may be impacted on roadways, at school, in homes, through the food supply, or in public venues (large stadiums, athletic events, movie theaters, etc.). The consequences of hazardous materials may be illness, injury, or death.	Responders face the immediate consequences of hazmat incidents. They must determine the type of material released or spilled and the appropriate response and cleanup of the material. A variety of responders are specially trained to deal with these incidences and they are provided protective gear to reduce their vulnerability to the hazardous materials.	Government facilities may be directly impacted by a hazmat release, spill, or terrorist act, impacting the ability to provide continued government services.	Property, facilities, and infrastructure will be significantly impacted by a hazmat incident. Especially in the event of an explosion, homes, businesses, industries, and infrastructure may be damaged or destroyed. In addition, most mobile hazmat releases are caused by traffic accidents, which can destroy vehicles, roadways, and signage.	The environment is likely to experience significant consequences from a hazmat incident. Sensitive ecosystems could be destroyed or significantly disturbed. Hazardous materials can be quickly spread through water, air, or the food supply. Once hazardous materials are in environmental systems, it may take days, weeks, months, or years to clean up.	Depending on the size of the incident, the economy could experience enormous consequences. Hazmat spills on highways or releases at chemical facilities impact the economy if an industry or transportation routes are shut down.	Public confidence in governance may be impacted by a hazmat incident. In small, localized events, impacts on public confidence are unlikely. These events happen on a regular basis. In a major chemical release, radiological release, or terrorist incident, the public may be inclined to lose confidence in governance.
Human Disease	Consequences to the public from a pandemic are vast. The public may experience temporary illness, long-term illness, or even death. Hospitals and doctor offices	Responders may also feel the consequences of pandemics. They may be exposed to the risk and become ill. Responders may have to wear protective gear and receive vaccinations to mitigate their risk.	As demonstrated by COVID-19, a pandemic has the potential to impact the government operations. To prevent the spread of infectious disease, government agencies may move to virtual operations.	It is unlikely that the consequences of a pandemic would physically impact property, facilities, or infrastructure; however, a pandemic would impact personnel, potentially impacting	Consequences to the environment from a pandemic are unlikely. Unless the event is terrorism or hazmat related, there will be no direct impact. See hazmat for more information.	The economic condition may be significantly impacted by a pandemic. If a significant percentage of the population becomes ill, they will not be able to go to work or spend money.	Public confidence in governance may be minimally impacted by a public health emergency that is short term in nature. However, as demonstrated by the COVID-19 pandemic,

DRAFT

Hazard	Impacts on:						
	The Public	Responders	Continuity of Government	Property, Facilities, and Infrastructure	Environment	Economic Condition of the Jurisdiction	Public Confidence in the Jurisdiction's Governance
	may become crowded, patients may experience long lines, and pharmaceuticals may be limited. The COVID-19 pandemic demonstrated the potential magnitude of the impact on the public in a significant way.			the ability to properly service and maintain property, facilities, and infrastructure.		Outbreak-related movement restrictions also have the potential to significantly impact the economy. With vaccinations and early detection of pandemics and other public health issues, the impacts can be partially mitigated.	long-term public health impacts and the inability of government to immediately eliminate them may erode public trust in government significantly.
Infrastructure Failure	Infrastructure failure can have a wide variety of negative impacts on the public. Road and bridge failures can significantly lengthen commutes. Failure of utility or wastewater infrastructure can create public health hazards, especially during periods of extreme temperature.	Infrastructure failure creates challenges for responders. In road and bridge failures, responders will need to both manage traffic concerns and injuries, as well as navigate around inaccessible areas. Public health impacts of sanitary system failure could increase responder workload.	Infrastructure failure is not expected to impact continuity of government, except in the case of a wide-spread failure of telecommunications systems.	Infrastructure failure, fundamentally, has a negative impact on infrastructure. Additionally, power system failures can lead to the damage to other structures and infrastructure from the prolonged absence of climate control and other functions.	Infrastructure failure can lead to the release of debris into the environment, as well as the release of chemicals, hazardous materials, natural gas, or anything else traveling through that infrastructure at the time of failure.	Infrastructure failure has significant economic consequences. Rebuilding failed infrastructure is often prohibitively expensive, costs that may ultimately be borne by taxpayers. The economic impact of the loss of roads and bridges for shipping can also be significant.	Infrastructure failure that results from deferred or insufficient maintenance could severely erode public confidence in government.
Levee Failure	Because the consequences of levee failure largely mirror that of flooding, the impacts to the public are largely the same as for river flooding; see "river flooding."	The sudden release of water can pose immediate threats to life and property, necessitating urgent evacuation and rescue operations.	Levee failure could result in flooding impacts to critical facilities, which could impact continuity of government; see "river flooding."	Levee failures can disrupt essential services such as electricity, water supply, and communication networks, both directly through physical damage and indirectly due to access issues. The	A levee failure can lead to environmental disasters, impacting water quality, wildlife habitats, and local ecosystems. Remediation and ecological restoration efforts may be	The economic impacts include the immediate costs of emergency response and infrastructure repairs, as well as longer-term effects on local economies due to business interruptions	If a levee were to fail, erosion of public trust would be expected, as the public is likely to blame the government for failing to maintain infrastructure and

DRAFT

Hazard	Impacts on:						
	The Public	Responders	Continuity of Government	Property, Facilities, and Infrastructure	Environment	Economic Condition of the Jurisdiction	Public Confidence in the Jurisdiction's Governance
				associated flooding can also damage residences and other facilities.	required in the aftermath.	and loss of property. See "river flooding" for more information.	prevent the hazard from occurring.
River Flooding	The public may face extreme consequences from flooding. Floods have the potential to injure and kill people, especially those who drive through flooded roadways. Floods can destroy residences and businesses, and interrupt water, power, and sewer services necessary to return to a normal way of life. Whether residents have flood insurance or receive assistance, the recovery process from a flood may be costly and take weeks, months, or years to complete.	Debris removal and emergency response costs from flooding can be significant. Responders may face extreme difficulties when responding to a flood event. Floods can destroy homes, businesses, and critical infrastructure such as EOCs, fire stations, and hospitals. Floods can wash out bridges and roadways, as well as destroy government buildings critical for response and recovery operations. Responders may have to perform swift water rescues to individuals trapped in flooded areas. Responders should be aware of their risks at all times.	Many access roads may be impacted by flooding, and in an extreme flood event, EOCs and other critical facilities may become inaccessible, even when not physically located in the SFHA. This may require municipal or county operations to move to alternate EOCs or function from secondary locations to maintain operations.	Flooding can cause widespread, significant damage to properties, facilities, and infrastructure. Property in the floodplain or other low-lying areas may be severely impacted or destroyed. Critical infrastructure like utilities, roadways, bridges, and Police, Fire, or EMS stations may be damaged or destroyed by floodwaters.	Environmental consequences of flooding are significant. Flooding may erode riverbeds, causing sediments to enter the waterways, clogging water management systems & waterways downstream. Floods can bring hazardous materials or pollution into waterways via runoff. Riparian ecosystems are negatively impacted with the introduction of sediments, pollutants & nutrients.	Flooding can have significant economic impacts, particularly in densely populated flood-prone areas and along rivers. The additional impact of flooding on transportation, agriculture, business continuity, and government services is substantial. Federal grants can aid in recovery efforts and alleviate the overall economic impact of flooding.	Education and awareness are key components to maintaining public confidence in governance during a flood, especially when managing extended recovery timelines.
Sinkholes / Landslides	Residents of Polk County are not likely to experience any impacts of sinkholes or landslides. There are no known reports of injuries from sinkholes and	Past occurrences of sinkholes and landslides have caused damage to infrastructure and roads, which can impact responders' ability to perform their duties.	Polk County does not expect sinkholes or landslides to cause issues maintaining continuity of government.	The biggest impact of sinkholes and landslides in Polk County is minor, infrequent damage to infrastructure and roads.	Environmental consequences of sinkholes and landslides are minimal, However, sinkholes can in some cases lead to water quality problems,	Sinkholes can cause structural damage, but the impact area tends to be limited to individual residences, structures, or pieces of infrastructure. The biggest economic	Sinkholes and landslides are not expected to affect public confidence in the jurisdiction's governance.

DRAFT

Hazard	Impacts on:						
	The Public	Responders	Continuity of Government	Property, Facilities, and Infrastructure	Environment	Economic Condition of the Jurisdiction	Public Confidence in the Jurisdiction's Governance
	related hazards in Polk County However, sinkholes and landslides can damage roadways, inconveniencing residents.				when surface waters are able to leak into groundwater.	consequences would be in the event of a sinkhole that created significant, extended transportation disruption, which could impact business interests.	
Structural Fire	Structural fires are common, and in extreme events, urban fire and explosions can cause serious injury and fatalities. There were 25 fire-related fatalities and 136 fire-related injuries in Polk County between 2019 and 2022.	Responders face significant consequences from structural fires, being tasked with dealing with and ending these dangerous incidents. Firefighters are at risk of injury and fatality during response due to smoke inhalation, poisoning, and structural collapse.	Structural fire (unless extremely widespread) is unlikely to impact continuity of government. However, if directly impacting an EOC, fire station, or other critical facility, it could impact the delivery of services and the safety of government employees.	Structural fire damage ranges from minor smoke or water damage to the destruction of residential, commercial, or public properties.	Structural fire at facilities with natural gas or hazardous material lines could have significant environmental impacts, due to the release of natural gas into the air, and potential damage to other subterranean infrastructure. Smoke from fires can be unsafe for animals. Fire can lead to contamination of water runoff systems, and the spread of cinders can (in rare cases) cause wildfire.	The economic impact of structural fires is low. The damage from most structural fires is limited to individual residences, where that damage tends to be covered by homeowners' insurance.	Public confidence in governance is not likely to be impacted by structural fire.

DRAFT

Hazard	Impacts on:						
	The Public	Responders	Continuity of Government	Property, Facilities, and Infrastructure	Environment	Economic Condition of the Jurisdiction	Public Confidence in the Jurisdiction's Governance
Thunderstorm with Lightning and Hail	The public may face localized consequences from a severe thunderstorm. Thunderstorms, lightning, and hail have the potential to injure and/or kill people, damage residences and businesses, and interrupt power service. Lightning may strike homes and businesses, potentially sparking a fire or damaging electrical systems. Hail can also cause damage to the roofs of homes and businesses. Recovery from a severe thunderstorm event may take several weeks.	Responders may face some difficulties when responding to a thunderstorm event. Trees may be down, blocking critical roadways and access points. Power lines may also be down in roadways or on private property. Localized flooding may require swift water rescues. Lightning may spark building and house fires, requiring immediate response. Responders should exercise caution when driving or operating in significant winds and may be unable to respond during significant hail. Restoration of utilities may be delayed as some equipment cannot operate in heavy winds.	Thunderstorm, lightning, and hail are unlikely to cause issues maintaining operations and the delivery of services, unless downed trees directly impact critical facilities, or those facilities do not have access to backup power.	Consequences to property, facilities, and infrastructure from thunderstorms are minimal. Downed trees and power lines are typical consequences from thunderstorms. Roofs and windows of homes and businesses may be damaged. Power service to residences and critical facilities may be impacted in the short term. Lightning has the potential to damage property, facilities, and infrastructure. Lightning can spark fires and destroy electrical systems. Hail has the potential to damage property, facilities, and infrastructure. Large hail can puncture roof tops, windshields, vehicles, windows, and other outdoor structures.	Severe thunderstorms in Polk County have historically had few consequences to the environment. In some cases, these storms can down trees and vegetation, cause hail damage, and cause localized flooding. Please see "Flooding". No major consequences to the environment are expected, except in extreme events where lightning could spark wildfires.	Consequences to the economic condition of the county (which experiences many thunderstorms and severe storms each year) will be minimal. While the annual cumulative costs of minor property and infrastructure damage might be significant, the impacts of individual events are usually minimal.	Public confidence in government is not expected to be impacted by severe thunderstorm events.
Tornado	All of Polk County is at risk from tornadoes, and the public could face	Responders will face significant difficulties responding to a tornado. Search & rescue	The county does not anticipate any issues maintaining operations and the delivery of	All property in Polk County is at risk from tornadoes. The consequences to	Because of the vast range of wind speeds associated with tornadoes,	The impacts of most tornadoes are typically limited to the properties directly in	Public confidence in government will not likely be impacted by a tornado event

DRAFT

Hazard	Impacts on:						
	The Public	Responders	Continuity of Government	Property, Facilities, and Infrastructure	Environment	Economic Condition of the Jurisdiction	Public Confidence in the Jurisdiction's Governance
	serious consequences. Tornadoes can be deadly. Common consequences of tornadoes to the public are damage to homes and businesses, interruption of utility services, and devastation to the local economy.	operations may be required. Communication systems may be destroyed. Road signs and landmarks may be missing when trying to navigate to survivors in need. Power lines, debris, and trees may block roadways and access points. Responders should exercise extreme caution.	services in the event of a tornado. If the EOC is directly affected by a tornado, it may be necessary to move to an Alternate EOC or function from another location to maintain operations during the event.	individual properties, facilities, and infrastructure from a tornado may be catastrophic.	consequences to the environment vary greatly. Even an EF0 (65-85mph) can uproot trees and vegetation. In stronger tornadoes, debris may be tossed miles away from the source, potentially entering our waterways. Hazardous materials may escape if vehicles are damaged, or storage tanks are compromised.	their paths. However, a large outbreak of tornadoes could damage enough properties as to cause localized economic impacts.	unless errors are made in the processes of forecasting and issuing warnings.
Transportation Incident	The people most vulnerable to transportation incidents are those involved in the accident. The energy imparted on the occupants of the vehicle(s) in an accident can cause serious injury and death. Particularly violent events may also produce projectiles which can harm anyone in the immediate vicinity. When transportation accidents result in	Responders can be significantly impacted by transportation accidents. Immediate response is essential for ensuring public safety, managing traffic, securing the crash site, and preventing secondary incidents. Emergency services, including police, fire, and rescue teams, are tasked with managing the impacts of transportation incidents, which can be challenging.	Transportation incidents are not expected to impact continuity of government.	Significant crashes, especially those involving large vehicles or trains, can cause damage to nearby buildings and infrastructure. Crashes can disrupt utility services, particularly if infrastructure like power lines, water pipes, or communication towers are damaged. Transportation crashes directly impact the transport network. Roads may be closed, rail services disrupted, and air or sea travel	The primary impact of transportation accidents on natural resources is contamination. It is not uncommon for transportation accidents to result in minor fuel spills, but these can often be remedied in a relatively quick manner. However, larger spills like those which can result from transportation accidents involving bulk shipments can be much more difficult	Transportation incidents are expected to have minor impacts on the economy. These include direct costs associated with emergency response, medical care, and infrastructure repair, as well as indirect costs like traffic delays and loss of business.	Transportation incidents are not expected to impact public trust in governance.

DRAFT

Hazard	Impacts on:						
	The Public	Responders	Continuity of Government	Property, Facilities, and Infrastructure	Environment	Economic Condition of the Jurisdiction	Public Confidence in the Jurisdiction's Governance
	fires and/or the release of hazardous materials, the wider public may suffer from exposure, and evacuations could be necessary.			affected. This disrupts the movement of people and goods and can have wider economic implications.	and time consuming to contain. A significant release of hazardous materials can kill wildlife, livestock, and pets, cause widespread crop failure, and destroy nature preserves.		
Windstorm	Windstorms can cause significant damage to homes, leading to displacement of residents and the need for temporary shelters and long-term rebuilding efforts.	Windstorms can directly impact responders by making it unsafe to travel to perform their regular duties. Immediate threats to life and property necessitate rapid emergency response, including search and rescue operations, medical assistance, and maintaining public order to prevent looting or other crimes in affected areas.	Windstorms can cause widespread power outages which, if extended in nature, could temporarily impact continuity of government.	In extreme wind events, wind has the potential to damage personal property, trees, and residences. Certain types of structures (including manufactured homes and structures without gable roofs) are more susceptible to wind damage. Because people with lower incomes are more likely to reside in this type of structure, they be more susceptible to this type of damage.	Windstorms can destroy trees and other plants, reducing the available habitat for some animals.	High winds can quickly flatten hundreds of thousands of acres of cropland. Widespread destruction of cropland can have severe economic consequences and potentially jeopardize food security in the affected area. The 2020 derecho, for example, occurred ahead of the harvest season, and led to the loss of approximately 50% of crop yields.	Windstorm is not expected to impact the public's confidence in government.
Winter Storm	Winter storms have the potential to impact the public by damaging infrastructure and private property and interrupting the delivery of utility services. Power	Debris removal and emergency response costs from winter storms can be significant. Debris in roadways poses the greatest hurdle for response operations following a winter storm. Responders face many	Critical operations are expected to continue during winter storm events without issue.	Winter storms (particularly ice storms, or snowstorms followed by heating and cooling cycles that lead to the presence of ice) can cause extensive damage to infrastructure. Collapsed roofs, downed	Consequences to the environment from winter storms include downed trees/branches, localized flooding from snow melt, and below freezing temperatures.	The economic condition of the county may be impacted by a widespread winter storm causing structural damage and service/ business interruptions.	Public confidence in government will likely not be impacted by a winter storm, unless there are significant errors in forecasts or delays in protective action decision-making (e.g., closures

DRAFT

Hazard	Impacts on:						
	The Public	Responders	Continuity of Government	Property, Facilities, and Infrastructure	Environment	Economic Condition of the Jurisdiction	Public Confidence in the Jurisdiction's Governance
	outages are common during winter weather, which affect public health and safety, as do the hazardous driving conditions winter storms create.	consequences from winter weather, including navigating dangerous roadways and working in freezing conditions. Ice and snow may bring down trees and power lines, causing widespread power outages.		power lines, vegetative debris in roadways, and damage to water and wastewater facilities may take weeks or months to fix.		Community members choosing to stay home in large numbers will spend less money purchasing food and goods.	and releases) that result in increased danger or harm. Winter weather is common in Iowa.

DRAFT

Chapter 4:
Mitigation Strategy



4. MITIGATION STRATEGY

44 CFR Requirement §201.6(c)(3): The plan shall include a mitigation strategy that provides the jurisdiction's blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs and resources, and its ability to expand on and improve these existing tools.

This section presents the mitigation strategy updated by the Hazard Mitigation Planning Committee (HMPC) based on the risk assessment. The mitigation strategy was developed through a collaborative group process and consists of updated general goal statements to guide the jurisdictions in efforts to lessen disaster impacts as well as specific mitigation actions that can be put in place to directly reduce vulnerability to hazards and losses. The following definitions are based upon those found in FEMA publication 386-3, Developing a Mitigation Plan (April 2003):

- **Goals** are general guidelines that explain what you want to achieve. Goals are defined before considering how to accomplish them so that they are not dependent on the means of achievement. They are usually long-term, broad, policy-type statements.
- **Objectives** are overarching themes from the goals that provide direction for the development of mitigation actions.
- **Mitigation Actions** are specific actions that help achieve goals.

4.1. GOALS AND OBJECTIVES

44 CFR Requirement §201.6(c)(3)(i): [The hazard mitigation strategy shall include a] description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.

As part of this update, the HMPC reviewed the goals from the 2018 Polk County Hazard Mitigation Plan to determine if they were still valid. The group discussed these goals during both the HIRA meeting on February 20, 2024 and the Strategy Meeting on March 19, 2024.

After a lively discussion, the planning committee determined that the 2018 goals needed to be revised to more clearly differentiate between them and reflect the priorities of the participating communities. The four goals in this update still share the same *intentions* as the previous four goals (with goals related to public information, increasing capacity, conducting physical mitigation, and coordinating with other agencies), but now more clearly state their targeted outcomes. The communities' new goals are:

1. Increase public awareness of disaster risk and empower the public to collectively and individually participate in hazard mitigation.
2. Increase municipal and county government capability to plan for and implement hazard mitigation projects, programs, and activities.
3. Engage and coordinate with public, nonprofit, and other non-governmental partners to expand the scope of hazard mitigation and encourage these entities to participate in risk reduction activities.
4. Conduct cost-effective hazard mitigation projects to reduce the vulnerability of critical facilities, infrastructure, and other assets.

In addition to goals for this plan, Polk County has incorporated overarching objectives, which identify methods for implementing the stated goals that are further realized in the proposed mitigation actions, which are discussed in the next section. The objectives are:

1. Prevention
2. Property Protection
3. Natural Resources Protection and Nature-Based Solutions
4. Emergency Services
5. Public Information
6. Data Analysis, Modeling, and Forecasting

Through prevention, the County seeks to ensure that tools such as land use planning, zoning, stormwater, building codes, subdivision ordinances, and natural resource/open space protection reduce the loss from future hazards. Furthermore, jurisdictions should determine whether NFIP and other floodplain management programs are sufficient for full mitigation of flood risk, and look towards their regional watershed management plans to ensure that decision-making processes are taking previous planning efforts into account.

Property protection is an ongoing task within Des Moines and other Polk County communities. Significant flood events have shown great opportunity to acquire repetitive loss properties, areas that are in need of stormwater management retrofitting, and the promotion of flood insurance participation beyond those properties in special flood hazard areas. This objective encompasses a wide variety of physical work to mitigate the effects of hazards, including property retrofits, strengthening dams, and infrastructure hardening.

Natural resource protection in an urbanized county like Polk is crucial, and development trends and national best practices suggest that nature-based solutions should be more aggressively pursued. Historically, wetlands across Central Iowa naturally provide protection from flooding, but as development has increased, much of these wetlands have been drained to make way for growing cities. Protecting natural resources must be a critical piece of development in Polk County. Jurisdictions should look towards their watershed management plans and authorities to ensure that natural resources are protected and helping to mitigate hazards from the beginning.

Emergency services across the County respond to incidents related to hazards in this plan on a daily basis. In terms of mitigation however, alert systems, data sharing, partnerships with state and federal organizations are all on the rise, and coordinated partnerships to ensure information is shared and utilized properly should continue to develop in order to protect from loss. The planning team understands that while FEMA may not consider work and costs related to emergency services to be part of hazard mitigation, they nonetheless form a critical avenue for reducing risk related to disasters in the community.

Empowering the public to take informed action with consistent and targeted public information can have significant impacts on the community's safety. The planning team aspires to foster a community where residents understand their risk, are aware of forthcoming threats, and understand best practices for staying safe. Increased utilization of social media provides additional and broader avenues for public information, and the planning team will work together to continue to strengthen public education procedures and coordination to ensure the public is wholly aware of hazards before, during, and after disaster events.

4.2. MITIGATION ACTION UPDATE PROCESS

44 CFR Requirement §201.6(c)(3)(ii): The mitigation strategy shall include a section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure.

During the Hazard Identification and Risk Assessment (HIRA) meeting, the second meeting of the HMPC, results of the risk assessment update were provided to the HMPC members for review. The concluded with an introduction to mitigation actions to prompt discussions within and among the jurisdictions about any new mitigation actions as well as on-going actions from the existing plans. Following this meeting, each jurisdiction was provided with a Strategy Worksheet, which asked for updates on the status of actions from the previous plan and information about new actions the communtiies' wished to add to the strategy.

The focus of the Strategy Meeting, the third meeting of the HMPC, was to update the mitigation goals and objectives and discuss the participants' progress towards reviewing and updating their own community action plans. Topics of discussion in this meeting included:

- Risks or issues identified by the communities for which a mitigation solution was not readily apparent
- Opportunities for multi-jurisdictional projects and coordination
- Alignment of potential grants with expected FEMA grant opportunities, including how funding in those programs is prioritized

In development of each jurisdiction's final mitigation strategy for submission to the plan, the jurisdictions were encouraged to review the details of the risk assessment to address vulnerabilities specific to their jurisdiction. The mitigation strategy update included a thorough review and status update of the existing actions. The table below provides a summary of the number of actions that each jurisdiction identified in the previous plan. Please note that the Des Moines Water Works and the public school districts were not included as officially participating jurisdictions in the previous plan. As a result, there are no previous actions for the school districts.

Table 127: Summary of Number of Actions in Previous Plan

Jurisdiction	Actions in Previous Plan
Polk County	8
City of Alleman	2
City of Altoona	18
City of Ankeny	16
City of Bondurant	7
City of Clive	21
City of Des Moines	22
City of Elkhart	5
City of Grimes	6
City of Johnston	8
City of Mitchellville	6
City of Pleasant Hill	16
City of Polk City	10
City of Runnells	4
City of Urbandale	28
Delaware Township	2
City of West Des Moines	25
City of Windsor Heights	5
Des Moines Water Works	4
Ankeny Schools	5
Bondurant-Farrar School District	2
Dallas Center-Grimes Schools	1
Des Moines Independent Schools	8
Johnston School District	2
North Polk Schools	1
Southeast Polk Schools	5
Urbandale Schools	12

West Des Moines Schools	4
Total	**253**

Of the 253 actions in the previous plan, 49 have been completed, 15 were deleted or combined with other actions, and 189 were continued in the plan update. The jurisdictions were encouraged to be comprehensive and include all appropriate actions to work toward becoming more disaster resistant. However, they were encouraged to maintain a realistic approach and were reminded that the hazard mitigation plan is a “living document”. As capabilities, vulnerabilities, or the nature of hazards that threaten each jurisdiction change, the mitigation actions can and should be updated to reflect those changes, including addition or deletion of actions, as appropriate. In updating the strategy, participants also considered the potential cost of each project in relation to the anticipated future cost savings. This type of discussion allowed the committee as a whole to understand the broad priorities and discussion of the types of projects most beneficial to all jurisdictions within Polk County.

4.3. STATUS OF 2018 PLAN ACTIONS

The table below provides an update on the status of the 253 actions included in the 2018 Polk County Hazard Mitigation Plan.

Table 128 – Status of 2018 Plan Actions

Status of 2018 Plan Actions			
Action ID	**Mitigation Project / Activity Description**	**Action Status (Continuing or Deleted)**	**Notes and Status Updates**
Polk County 1	Continue to comply with the NFIP by enforcing floodplain management ordinance, including regulating/ monitoring new construction and substantial improvements in the SFHA; and participating in floodplain identification and mapping.	Continuing	Ongoing action
Polk County 2	Construction of Storm Water Detention Basins, Buffer Strips, and Channel Improvements to Fourmile Creek though the Fourmile Creek Watershed Authority	Continuing	No progress
Polk County 3	Construction of Storm Water Detention Basins, buffer Strips, and Channel Improvements to Mud, Camp, and Spring Creek watersheds though the Watershed Authority	Continuing	No progress
Polk County 4	Construction of Storm Water Detention Basins, buffer Strips, and Channel Improvements to the Walnut Creek watershed though the Watershed Authority	Continuing	No progress
Polk County 5	Construction of Storm Water Detention Basins, buffer Strips, and Channel Improvements to the Beaver Creek watershed though the Watershed Authority	Continuing	No progress
Polk County 6	Reconstruction of a Skunk River Crossing to assure emergency responders can cross the Skunk River during times of extreme flooding. In 2010, only one crossing in Polk County was open in a 30-mile section of the river.	Continuing	No progress
Polk County 7	Construct severe weather safe rooms for three Polk County Public Works Maintenance Facilities	Continuing	Two of three completed; adjusting wording of action in new plan to reflect one remaining facility
Polk County 8	Update siren software to polygon based system	Continuing	No progress

Status of 2018 Plan Actions			
Action ID	**Mitigation Project / Activity Description**	**Action Status (Continuing or Deleted)**	**Notes and Status Updates**
Alleman 1	Construct retention pond at Northeast 134	Deleted	Project complete; residents maintain this new dry pond for stormwater runoff.
Alleman 2	Consider participation in the NFIP	Continuing	In progress; Clerk is working on related documents
Altoona 1	Continue to comply with the NFIP by enforcing floodplain management ordinance, including regulating/ monitoring new construction and substantial improvements in the SFHA; and participating in floodplain identification and mapping.	Continuing	No progress
Altoona 2	Stormwater detention basin improvement - Tuscany Pond; removed sediment from pond to regain capacity and construct new outfall.	Continuing	No progress
Altoona 3	Secondary storm sewer installation	Continuing	No progress
Altoona 4	Storm sewer installation 4th St SW from Lion's Park to 5th Ave NW	Continuing	No progress
Altoona 5	Adventureland Park Drainage Improvements - detention pond modifications, culvert improvements, stream bank stabilization	Continuing	No progress
Altoona 6	Traffic signal fiber	Deleted	Project Complete
Altoona 7	Community Center Security Cameras	Deleted	Project Complete
Altoona 8	4 Safe rooms for multiple park sites	Continuing	No progress
Altoona 9	Replace 5 severe weather sirens	Continuing	No progress
Altoona 10	Addition of 4 new severe weather sirens	Continuing	No progress
Altoona 11	Construction of new Fire Station #26	Continuing	No progress
Altoona 12	Addition of new Firefighting Engine	Deleted	Project in progress at time of plan update and to be completed soon
Altoona 13	Sanitary sewer lining 5th Ave SW to 8th Ave SE, south of the railroad tracks	Continuing	No progress

Status of 2018 Plan Actions			
Action ID	**Mitigation Project / Activity Description**	**Action Status (Continuing or Deleted)**	**Notes and Status Updates**
Altoona 14	Remove sump pump and footing tiles from sanitary sewers	Continuing	No progress
Altoona 15	New water storage facility to replace existing 50,000 gallon tower	Deleted	Project Complete
Altoona 16	New water treatment plant	Continuing	No progress
Altoona 17	New well	Continuing	No progress
Altoona 18	Sanitary sewer lining all existing clay sewer mains	Continuing	No progress
Ankeny 1	Construct safe room(s) at Mel Ray Mobile Home Park	Continuing	No progress
Ankeny 2	Construct safe room(s) at Autumn Ridge Mobile Home Park	Continuing	No progress
Ankeny 3	Tradition Park Detention Basin Flood Improvements	Deleted	Project Complete
Ankeny 4	Westwinds Channel Fortification	Deleted	Project Complete
Ankeny 5	Northcreek Channel Flood Prevention Measures	Deleted	Project Complete
Ankeny 6	Sawgrass Park Dam Improvements	Continuing	No progress
Ankeny 7	Saylor Creek Tributary Channel Improvements	Continuing	No progress
Ankeny 8	Storm sewer/channel improvements Four Mile Creek bank stabilization	Continuing	No progress; project included in City SW Master Plan, 2040 Plan
Ankeny 9	Reconstruct storm water detention - Packard Pond improvements	Deleted	No progress; removing from 2024 project list.
Ankeny 10	Continue to comply with the NFIP by enforcing floodplain management ordinance, including regulating/ monitoring new construction and substantial improvements in the SFHA; and participating in floodplain identification and mapping.	Continuing	Project is Ongoing
Ankeny 11	Reconstruct storm water detention - Wildflower Public Pond improvements	Deleted	Project Complete
Ankeny 12	Storm sewer/channel improvements - SE Creekview Drive Improvements	Deleted	Project Complete
Ankeny 13	NW Elm Lane Sanitary Sewer Replacement	Deleted	Project Complete

Status of 2018 Plan Actions			
Action ID	**Mitigation Project / Activity Description**	**Action Status (Continuing or Deleted)**	**Notes and Status Updates**
Ankeny 14	Briarwood Sanitary Sewer Upsizing / Replacement	Continuing	Community is studying the scope and needs of the project
Ankeny 15	Central City Areas - Sewer Upsizing and Replacements	Continuing	Project is Ongoing
Ankeny 16	Construct safe room(s) at On With Life Care Facility	Continuing	No progress
Bondurant 1	Update tornado warning system	Continuing	No progress
Bondurant 2	Generator at Public Safety Building	Continuing	No progress
Bondurant 3	NW 2nd St. Culvert Expansion	Continuing	No progress
Bondurant 4	15th St. SW Bridge Replacement	Continuing	No progress
Bondurant 5	Mud Creek Channel Restoration	Continuing	No progress
Bondurant 6	Mud Creek Regional Detention Facility/Grant St. South Relocation	Continuing	No progress
Bondurant 7	Continue to comply with the NFIP by enforcing floodplain management ordinance, including regulating/ monitoring new construction and substantial improvements in the SFHA; and participating in floodplain identification and mapping.	Continuing	No progress
Clive 1	Radio Upgrade	Continuing	Converting to a County-Wide action, reflecting the need for interoperability of these systems
Clive 2	Install/Replace backup generators	Continuing	No Progress
Clive 3	Website Enhancement	Continuing	Rewording action to reflect broader communications needs
Clive 4	Streambank Stabilization Projects	Continuing	Work ongoing; rephrasing action in plan to specify more types of projects
Clive 5	Reconstruct Greenbelt Trail bridges	Continuing	No Progress
Clive 6	Reconstruct NW 86th Street bridge	Continuing	No Progress

Status of 2018 Plan Actions			
Action ID	**Mitigation Project / Activity Description**	**Action Status (Continuing or Deleted)**	**Notes and Status Updates**
Clive 7	Reconstruct railroad bridge (7800 block University Blvd)	Continuing	No Progress
Clive 8	Little Walnut Creek floodplain acquisitions	Deleted	Project Completed
Clive 9	Walnut Creek floodplain acquisitions	Continuing	Ongoing; about 30 acres remaining
Clive 10	North Walnut Creek floodplain acquisitions	Continuing	Ongoing; about 8 acres remaining
Clive 11	University Blvd Neighborhood Flood Mitigation Planning and Implementation	Continuing	Planning completed; implementation (including buyouts, floodproofing, and adaptive land reuse) ongoing
Clive 12	Indian Hills Neighborhood Flood Mitigation Planning and Implementation	Continuing	No Progress
Clive 13	Buffalo Road Secondary Water Source	Deleted	Project Completed
Clive 14	Relocation of Porter Shelter	Continuing	No Progress
Clive 15	Swanson Blvd Flapgates	Continuing	No Progress
Clive 16	University Blvd Flood Mitigation Improvements (Minor)	Continuing	No Progress
Clive 17	Regional Stormwater Management Facilities (modifications)	Continuing	No Progress
Clive 18	Regional Stormwater Facilities (outside of Clive)	Continuing	No Progress; rewording action in 2024 plan
Clive 19	Regional Stormwater Facilities (within Clive)	Continuing	No Progress; rewording action in 2024 plan
Clive 20	Repetitive Loss Buyout Program	Deleted	Action removed from list to remove redundancy from multiple acquisition-related actions
Clive 21	Flood Alert Early Warning System Enhancements	Continuing	Converting to a County-Wide action
Des Moines 1	Pursue remedial flood mitigation actions associated with the Southeast Des Moines (SEDM) Levee, US 65	Continuing	Ongoing action
Des Moines 2	Comply with the NFIP by enforcing floodplain management ordinance, including regulating/ monitoring new construction and substantial improvements in the SFHA; and participating in floodplain identification and mapping.	Continuing	Ongoing action

Status of 2018 Plan Actions			
Action ID	**Mitigation Project / Activity Description**	**Action Status (Continuing or Deleted)**	**Notes and Status Updates**
Des Moines 3	Construct safe room(s) at Des Moines Municipal Housing Agency's multi-family units	Continuing	Ongoing action; actively seeking grant opportunities
Des Moines 4	Harden single family home scattered site Public Housing units	Deleted	The city is opting to sell these homes instead.
Des Moines 5	Treatment and removal of ash trees in response to onset of Emerald Ash Borer (EAB)	Continuing	Ongoing action
Des Moines 6	Des Moines River Flood Mitigation Improvements - Flood protection system improvements (levees, floodwalls, pump stations, etc.) to maintain FEMA accreditation despite increased flows identified in 2011 Des Moines River Regulated Flow Frequency Study.	Continuing	Ongoing action
Des Moines 7	Hamilton Drainage Area Stormwater Improvements - Storm sewer conveyance improvements to Increase storm sewer capacity and/or construct detention/G.I. to reduce identified flood risk concerns.	Continuing	Ongoing action
Des Moines 8	Leetown Creekway Stormwater Improvements - Increased storm sewer capacity between University Avenue and Dean Avenue and channel improvements from south of Dean Avenue to confluence with Fourmile Creek.	Deleted	Project Completed
Des Moines 9	Closes Creek Stormwater Improvements - Increase storm sewer capacity and/or construct detention/G.I. to reduce identified flood risk concerns	Continuing	Ongoing action
Des Moines 10	Crawford Creek Stormwater Improvements - Increased storm sewer capacity and/or construct detention/G.I. to reduce identified flood risk concerns	Continuing	Ongoing action
Des Moines 11	Sanitary Sewer Separation Projects - Install storm sewer to eliminate CSO's that discharge sanitary water to the river	Continuing	Ongoing action
Des Moines 12	City-wide Small Watershed Flood Mitigation Projects - Identify and construct projects that increase storm sewer capacity and/or construct detention/G.I. to reduce flood risk concerns	Continuing	Ongoing action; city-wide stormwater master plan program used to select projects
Des Moines 13	Storm Water Pump Station Rehabilitation - Updates to pump stations to provide resiliency	Continuing	Ongoing action

Status of 2018 Plan Actions			
Action ID	**Mitigation Project / Activity Description**	**Action Status (Continuing or Deleted)**	**Notes and Status Updates**
Des Moines 14	Voluntary acquisition and demolition of all single and two-family residential structures in the floodplain and repetitive loss properties. Estimated 220 structures would be acquired.	Continuing	Ongoing action; voluntary acquisition based on funding and interest from property owners; will take decades to complete.
Des Moines 15	Revise Floodplain Development regulations to increase freeboard height, implement compensatory fill, and limit enclosures in the floodplain.	Deleted	Action Completed
Des Moines 16	Construct safe room in new fire station(s)	Continuing	Ongoing action; targeting new Station 4 construction in FY25/26
Des Moines 17	Generator for new fire station(s)	Continuing	Ongoing action; targeting new Station 4 consturction in FY25/26
Des Moines 18	Construct safe room in new City Hall Annex	Continuing	Modifying action to account for city choosing to relocate instead of building an annex
Des Moines 19	Generator and 72-hour fuel storage for new City Hall Annex	Continuing	Modifying action to account for city choosing to relocate instead of building an annex
Des Moines 20	Building inventory for Fire Dept. community risk assessment / analysis	Continuing	Included in 2023 CRA; continue through accreditation process (FY25)
Des Moines 21	Regional NextGen 911 data improvements	Deleted	City of Des Moines re-engineered the Regional GIS data editing workflow currently in use by Regional GIS Partners. New NG911 Data Quality checks and data load processes for submitting data to State of Iowa have been implemented. City of Des Moines will spend approximately $45,000 for GIS consulting to support the latest NG911 data maintenance improvements.
Des Moines 22	Damage assessment data collection tools and standard operating procedures during and after emergency events	Continuing	City utilizes IHSEMD's damage assessment data collection tool and follows their workflow for reporting and capturing information
Elkhart 1	Construct safe room at Elkhart Memorial Park	Continuing	No progress
Elkhart 2	Construct safe room in NEW fire station	Continuing	No progress

Status of 2018 Plan Actions			
Action ID	**Mitigation Project / Activity Description**	**Action Status (Continuing or Deleted)**	**Notes and Status Updates**
Elkhart 3	Generator for new fire station	Continuing	No progress
Elkhart 4	Generator at city water plant	Continuing	No progress
Elkhart 5	Construct safe room at Elkhart Community Center	Continuing	No progress
Grimes 1	Construct safe room at existing facilities	Deleted	Removing from list
Grimes 2	Generators at City Hall	Continuing	New City Hall building is currently being planned
Grimes 3	Generator at fire station	Continuing	New fire station is currently being planned
Grimes 4	Warning siren northeast and southwest areas of city	Deleted	Complete; 3 new sirens were installed in 2021
Grimes 5	Continue to comply with the NFIP by enforcing floodplain management ordinance, including regulating/ monitoring new construction and substantial improvements in the SFHA; and participating in floodplain identification and mapping.	Continuing	Ongoing
Grimes 6	Update existing warning sirens to be compatible with single siren activation	Deleted	Obsolete; 3 new sirens were installed in 2021
Johnston 1	Update outdoor warning system	Deleted	Project Completed
Johnston 2	Construct Detention Basin Northglenn Neighborhood West of Merle Hay Road	Continuing	No Progress
Johnston 3	Extend 72" Storm Sewer Pipe under Johnston Drive	Continuing	No Progress
Johnston 4	Construct flood control structure on Johnston Drive	Continuing	No Progress
Johnston 5	Multi-purpose Safe Room at Lew Clarkson Park	Continuing	Recently-constrcuted concession stand did not meet safe room standards
Johnston 6	Continue to work with Iowa DOT to eliminate flooding at Northwest Beaver Drive (water impounded since the 2008 flood may be affecting the water table and may be polluted)	Continuing	Ongoing
Johnston 7	Conduct flood impact study on Merle Hay and Beaver Creek area	Continuing	DNR has determined that FEMA mapping is incorrect in this area

Status of 2018 Plan Actions			
Action ID	**Mitigation Project / Activity Description**	**Action Status (Continuing or Deleted)**	**Notes and Status Updates**
Johnston 8	Continue to comply with the NFIP by enforcing floodplain management ordinance, including regulating/ monitoring new construction and substantial improvements in the SFHA; and participating in floodplain identification and mapping.	Continuing	Ongoing
Mitchellville 1	Improve ditch and culvert drainage in northwest part of town	Deleted	Project Completed
Mitchellville 2	Backup power generator for police/fire station	Continuing	No Progress
Mitchellville 3	New roof for police/fire station	Continuing	No Progress
Mitchellville 4	Re-wiring the electrical system for police/fire station	Continuing	No Progress
Mitchellville 5	New siren on east edge of town	Continuing	No Progress
Mitchellville 6	Continue to comply with the NFIP by enforcing floodplain management ordinance, including regulating/ monitoring new construction and substantial improvements in the SFHA; and participating in floodplain identification and mapping.	Continuing	Ongoing
Pleasant Hill 1	Generators for lift stations: 6400 Southeast 6th Street; Northeast 80th Street; Vandalia Road; Harbor Lake Drive, and Southeast 60th Street	Continuing	Completed for all locations except SE 60th street; revising wording of action in new plan
Pleasant Hill 2	Flood mitigation planning elevation of southeast connector so water passes underneath – current road is in flood zone	Continuing	In progress; road construction funded through INFRA and likely will be constructed during this planning cycle.
Pleasant Hill 3	Creation of storm water utility (with taxing and bonding authority) Explore increase to utilities fees to complete storm water utilities.	Continuing	Ongoing; updating wording of action in new plan
Pleasant Hill 4	Relocation of and construction of new fire station	Deleted	Project Completed
Pleasant Hill 5	Relocation of gas pumps for city vehicles which are in flood zone	Continuing	Ongoing; updating wording of action in new plan
Pleasant Hill 6	Safe room incorporation into new city facilities / construction	Continuing	No Progress
Pleasant Hill 7	Regional detention facility at northeast 80th Street	Continuing	Ongoing; updating wording of action in new plan
Pleasant Hill 8	Enhance combined development of Des Moines Area Regional GIS Partnership	Continuing	No Progress
Pleasant Hill 9	Construction of new culvert at Little Four Mile Creek Drive 4400 block	Continuing	Ongoing; updating wording of action in new plan

Status of 2018 Plan Actions			
Action ID	**Mitigation Project / Activity Description**	**Action Status (Continuing or Deleted)**	**Notes and Status Updates**
Pleasant Hill 10	Pursue remedial flood mitigation actions associated with the South East Des Moines (SEDM) Levee, US 65	Continuing	No Progress
Pleasant Hill 11	Continue to comply with the NFIP by enforcing floodplain management ordinance, including regulating/ monitoring new construction and substantial improvements in the SFHA; and participating in floodplain identification and mapping.	Continuing	Ongoing
Pleasant Hill 12	Flood way buyout program	Continuing	No Progress
Pleasant Hill 13	Construction of Storm Water Detention Basins, Buffer Strips, and Channel Improvements to Fourmile Creek though the Fourmile Creek Watershed Authority	Continuing	No Progress
Pleasant Hill 14	Construction of Storm Water Detention Basins, buffer Strips, and Channel Improvements to Four Mile Creek watersheds though the Watershed Authority	Continuing	Ongoing; updating wording of action in new plan
Pleasant Hill 15	Management of Stream Buffers - along creek beds / river beds	Continuing	Ongoing
Pleasant Hill 16	Construction of new box culvert at Parkridge Ave across from the Cemetery	Deleted	Project Complete
Polk City 1	Safe Room for: police department/fire department/ community center/city hall/ visitors at area lakes	Continuing	No Progress
Polk City 2	Safe room for sports complex	Continuing	No Progress
Polk City 3	Advocate for structural enhancements to Mile Long Bridge to bring to current DOT standards	Continuing	No Progress
Polk City 4	Raise levee elevation for sewer treatment facility on East Broadway Street	Deleted	No longer needed; new lift station was built higher and lagoons no longer used
Polk City 5	Advocate for expanding pumping capacity for sewer treatment facility pumping to Saylorville Reservoir	Deleted	Project Completed by Army Corps of Engineers in 2023
Polk City 6	Raise wellheads and associated electrical for Polk City Well Field on North 3rd Street and East Northside Drive	Deleted	Ownership of wells being transferred from the City to Central Iowa Water Works
Polk City 7	Storm sirens at Hugg Drive and Westside Drive	Continuing	No Progress

Status of 2018 Plan Actions			
Action ID	**Mitigation Project / Activity Description**	**Action Status (Continuing or Deleted)**	**Notes and Status Updates**
Polk City 8	Lining of public sewers to mitigate infiltration of the main pump.	Continuing	No Progress
Polk City 9	Culvert at N 3rd -Bedshed Drive to mitigate water running over the road flooding buildings	Continuing	No Progress
Polk City 10	Join the National Flood Insurance Program	Continuing	No Progress
Runnells 1	Backup power generator for community center at 108 Brown Street	Continuing	Project Ongoing
Runnells 2	Document electronic backup for city critical documents	Continuing	Community actively seeking funding
Runnells 3	Development of new lagoon at sewer station to mitigate overflow in high rains	Continuing	In progress; expecting completion June 2025
Runnells 4	Continue to comply with the NFIP by enforcing floodplain management ordinance, including regulating/ monitoring new construction and substantial improvements in the SFHA; and participating in floodplain identification and mapping.	Continuing	Ongoing
Urbandale 1	Oxbow Construction	Deleted	Project Completed
Urbandale 2	Flood way buyout program	Continuing	1 voluntary buyout 2021, program available as needed
Urbandale 3	Buyout Property Redesign Program	Continuing	1 voluntary buyout 2021, program available as needed
Urbandale 4	Police Station Expansion and Fleet Storage	Continuing	In planning stage, funding allocated
Urbandale 5	Police Station – Douglas Entrance	Deleted	Project Completed
Urbandale 6	Fire: Rescue Truck Replacement	Continuing	Scheduled for delivery Summer 2024
Urbandale 7	Fire: Truck Replacement	Continuing	Scheduled for delivery Fall 2024
Urbandale 8	Fire: Truck	Deleted	Project Completed
Urbandale 9	Fire: Tender	Continuing	Pending future annexation
Urbandale 10	Looped Fiber Connection Between City Facilities	Continuing	Scheduled for completion by July 2024
Urbandale 11	Phone and Network Upgrade	Deleted	Project Completed
Urbandale 12	Drainage Improvements-Various Locations	Continuing	Annual program in place
Urbandale 13	Intake Rebuilding	Continuing	Annual program in place

Status of 2018 Plan Actions			
Action ID	**Mitigation Project / Activity Description**	**Action Status (Continuing or Deleted)**	**Notes and Status Updates**
Urbandale 14	Aurora Avenue Railroad Crossing	Deleted	Project Completed
Urbandale 15	Hickman Road at 128th Street	Continuing	DOT project, nearing completion
Urbandale 16	Interchange Modifications and Collector Distributor Connections- Interstate 35/80 and Highway 141 / NW Urbandale Drive / Meredith	Deleted	Project Completed
Urbandale 17	100th Street Interchange at I-35/80	Deleted	Project Completed
Urbandale 18	72nd Street Replacement with Storm Sewer	Deleted	Project Completed
Urbandale 19	104th Street with Storm Sewer	Deleted	Project Completed
Urbandale 20	Battery Backup Signalization	Deleted	Project Completed
Urbandale 21	Water Main Projects	Continuing	Annual program in place
Urbandale 22	Warning siren at Alice's Road	Deleted	Project Completed
Urbandale 23	Traffic Signal Battery Back up	Continuing	52 out of 58 signals have battery backups.
Urbandale 24	Storm Sewer inflow elimination program	Deleted	
Urbandale 25	Storm water grant programs	Continuing	Annual program in place
Urbandale 26	Storm shelters in Public Parks	*Deleted*	
Urbandale 27	Creek Bank Stabilization	Continuing	Annual program in place
Urbandale 28	Community Scholarship for swimming lessons	Continuing	Annual program in place
Delaware Township 1	Standby Generator Installation	Continuing	No Progress
Delaware Township 2	Township Plow Purchase	Deleted	Project Completed
West Des Moines 1	Elevation of I-35 Bridge over Raccoon River and Highway 28 Bridge over Raccoon River to mitigate washout	Continuing	No Progress
West Des Moines 2	Pursue remedial flood mitigation actions associated with the Southeast Des Moines (SEDM) Levee, US 65	Continuing	No Progress

Status of 2018 Plan Actions			
Action ID	**Mitigation Project / Activity Description**	**Action Status (Continuing or Deleted)**	**Notes and Status Updates**
West Des Moines 3	Lining of public sewers in the Valley Junction Area to mitigate infiltration at the Main Pump-2 Phases	Continuing	No Progress
West Des Moines 4	Lining of public sewers in the Fairmeadows Creek Area to mitigate infiltration of the main pump	Continuing	No Progress
West Des Moines 5	Incorporate and adopt recommended ASCE Flood Resistant Design and Construction Guidelines into City Building Code and Floodplain Management section of City Code (Title 9, Ch. 12)	Deleted	ASCE Flood Resistant Design and Construction Standards have been incorporated in the Building Code and have been adopted by the City. Standards related to Flood Design Class can be incorporated into the Floodplain Management chapter of City code when the next FEMA/FIRM updates occur. (L
West Des Moines 6	Design MidAmerican Energy RecPlex to function as an essential facility (evacuation center) during emergency response. Classify as a Flood Design - Class 4. Ensure connection to roadway, loading dock and primary structure are built at ASCE Design Flood Elevation guidelines. Harden building elements to provide storm shelter for building and recreational field users.	Deleted	Construction on the facility complete – actions were not implemented.
West Des Moines 7	Map and buffer Tier II facilities within City and adjacent to City perimeter. Develop emergency response and subsequent evacuation routes for HAZMAT incidents based on these mappings.	Continuing	No Progress
West Des Moines 8	Implement recommended storm water improvements from the Westown-PCP drainage study.	Continuing	No Progress
West Des Moines 9	Installation of ice protection structures at regional radio communications infrastructure sites.	Continuing	No Progress
West Des Moines 10	Incorporate and adopt recommended ASCE Flood Resistant Design and Construction Guidelines into City Building Code and Floodplain Management section of City Code	Deleted	Removing duplicative action from list
West Des Moines 11	Develop evacuation routes for hazard incidents, flooding incidents, and serve weather incidents.	Continuing	No Progress

Status of 2018 Plan Actions			
Action ID	**Mitigation Project / Activity Description**	**Action Status (Continuing or Deleted)**	**Notes and Status Updates**
West Des Moines 12	Map Tier II facilities within City and adjacent to City perimeter.	Continuing	No Progress
West Des Moines 13	In conjunction with redevelopment, identify and implement storm water drainage improvement recommendations within the Blue Creek drainage basin.	Continuing	No Progress
West Des Moines 14	Enhance current floodplain management efforts by updating the Floodplain Management Ordinance, which includes new Flood Insurance Rate Maps, associated ordinance language approved by IDNR/FEMA, and increased requirements for City facilities including public services, emergency services, and similar structures that are critical to maintaining City functions in an emergency to be elevated a minimum of one (1) foot above the 500-year flood.	Continuing	No Progress
West Des Moines 15	SE Basins Stormwater Improvements (Valley Junction Area) approximate boundary: 19th St. & Woodland Ave. to Grand Ave. & Railroad Avenue to Lincoln St. & HWY 28 to Hwy 28 & Prospect Ave.	Continuing	No Progress
West Des Moines 16	NE Basins Stormwater Improvements (Valley Junction Area) approximate boundary: Hwy. 28 & N. of Ashworth Rd. to Hoak Dr. & IA Interstate RR to Office Park Road & 15th St. to Ashworth Rd. & 11th St. to Ashworth Rd. & 9th St. to Grand Ave. & 9th St. to Grand Ave. & 8th St. to 5th St. & Prospect Ave. to 5th St. & Vine St. to Hwy 28 & Vine St. to Hwy 28 & Lincoln St. to Walnut Creek Levee (Des Moines) to Hwy. 28 & N. of Ashworth Rd.	Continuing	No Progress
West Des Moines 17	Raccoon River - Bank Stabilization	Continuing	No Progress
West Des Moines 18	Grand Avenue Stormwater Pump Station Near Raccoon River Dr.	Continuing	No Progress
West Des Moines 19	Blue Creek Basins Stormwater Improvements (5 Basins)	Continuing	No Progress
West Des Moines 20	Iowa Interstate Railroad Bridge near Raccoon River Park Entrance and Raccoon River Park Soccer Complex Culvert	Continuing	No Progress

Status of 2018 Plan Actions			
Action ID	**Mitigation Project / Activity Description**	**Action Status (Continuing or Deleted)**	**Notes and Status Updates**
West Des Moines 21	Fairmeadows Creek - 27th & Vine Culvert	Continuing	No Progress
West Des Moines 22	Walnut Creek Watershed Management Authority Misc. Projects	Continuing	No Progress
West Des Moines 23	62nd & Railroad Ave Sanitary Sewer Gate Structure Replacement	Continuing	No Progress
West Des Moines 24	8th Street Reconstruction - I-235 to Clegg Road	Continuing	No Progress
West Des Moines 25	S. 88th Street Railroad Crossing improvements- Near Raccoon River Drive	Continuing	No Progress
Windsor Heights 1	Install residential check valves at Washington Avenue and 70th Street	Continuing	No Progress
Windsor Heights 2	Replace storm sewer intakes	Continuing	No Progress
Windsor Heights 3	Identify potential future shelter sites	Continuing	No Progress
Windsor Heights 4	Continue to comply with the NFIP by enforcing floodplain management ordinance, including regulating/ monitoring new construction and substantial improvements in the SFHA; and participating in floodplain identification and mapping.	Continuing	No Progress
Windsor Heights 5	Walnut Creek bank stabilization	Continuing	No Progress
Des Moines Water Works 1	Upgrade Interior Drainage Pumping System inside the levee protected area at Fleur Drive Water Treatment Plant.	Deleted	Project Completed
Des Moines Water Works 2	Relocate grounds maintenance facility to the dry side of the levee system to reduce repetitive loss potential.	Deleted	Project ongoing (building new grounds maintenance facility on the dry side of the levee) and expected to be completed soon.
Des Moines Water Works 3	Evaluate and repair flood gates located at the Fleur Drive Water Treatment Plant.	Continuing	A study is being completed in 2024.
Des Moines Water Works 4	Evaluation of ring levee protecting Fleur Drive Water Treatment Plant.	Continuing	A study is being completed in 2024.

Status of 2018 Plan Actions			
Action ID	**Mitigation Project / Activity Description**	**Action Status (Continuing or Deleted)**	**Notes and Status Updates**
Ankeny Schools 1	Multi-purpose Safe Rooms District Wide	Continuing	One storm shelter added to each high school with completion of new additios (capacity of 400 at both locations). The newest elementary school (opening fall 2024) will have safe room capacity for the entire school.
Ankeny Schools 2	Emergency HVAC Shut-Off	Continuing	No updates
Ankeny Schools 3	Safety Film/Glass	Continuing	Every school entrance will have safety film applied to the glass by the end of March 2024. We would like to continue with all exterior windows, especially those on the 1st floor.
Ankeny Schools 4	Back-up Facility Generators	Continuing	No updates
Bondurant-Farrar Schools 1	Safety Glass	Deleted	The district has secured fuding through a school safety grant program
Bondurant-Farrar Schools 2	Storm Safe Room at Anderson Elementary	Continuing	This is still the only building that does not have a hardened space for student safety in high wind or storm events. District would like to make this happen in the future.
Dallas Center-Grimes Schools 1	Construction of safe rooms in existing or new school buildings	Deleted	Removing action, as the district is not participating in the 2024 update of the plan
Des Moines Schools 1	DAS and repeaters- (Distributed antenna system) As Des Moines Public Schools becomes more energy efficient, cellular and radio communications are blocked within our buildings. In order to combat this, we need to add DAS antennas and repeaters. This improves communication capabilities for not only DMPS staff, but also all emergency responders.	Continuing	In-progress. Radios purchased with LTE coverage and currently looking at a system that will leverage IP based building radios which would tie into the Statewide ISICS radio system.
Des Moines Schools 2	Virtual, remote server farm service for disaster recovery due to flood, tornado, windstorm. Our servers are in a building that is in a flood plain. Our back-up system is downtown which also has the potential to flood. In order to recover from a disaster we need the ability to transfer all systems to a remote 3rd party.	Continuing	No Updates

Status of 2018 Plan Actions			
Action ID	**Mitigation Project / Activity Description**	**Action Status (Continuing or Deleted)**	**Notes and Status Updates**
Des Moines Schools 3	Backup Generation at all of our schools and administrative offices	Continuing	No Updates
Des Moines Schools 4	Construct new safe rooms at various elementary schools	Continuing	No Updates
Des Moines Schools 5	Construct a multipurpose room as a safe room-Jefferson Elementary	Deleted	Project Completed
Des Moines Schools 6	Construct a multipurpose room as a safe room-Lovejoy Elementary	Deleted	Project Completed
Des Moines Schools 7	Construct a multipurpose room as a safe room-Studebaker Elementary	Deleted	Project Completed
Des Moines Schools 8	Construct a multipurpose room as a safe room-Wright Elementary	Deleted	Project Completed
Johnston Schools 1	Sprinkle facility at 6510 NW 62nd when repurposing the building	Contnuing	No updates
Johnston Schools 2	Replace and upgrade of emergency communication radio system	Contnuing	No updates
North Polk Schools 1	Conduct needs analysis and feasibility study for safe rooms at Central Elementary and North Polk Junior/Senior High School	Contnuing	Vulnerability assessment completed; working on projects to implement safe room construction. Rewording action in new plan to reflect status change.
Southeast Polk Schools 1	Contraction of Multi-purpose Safe Rooms District Wide	Contnuing	Rewording in updated plan
Southeast Polk Schools 2	Double-entry systems in each school; bullet-resistant glass	Deleted	Project Completed
Southeast Polk Schools 3	Internal and outward-facing electronic communications for emergency/disaster mitigation	Contnuing	In progress, via school safety grant plan implementation
Southeast Polk Schools 4	Emergency Radios--Cabinet Members (6)	Contnuing	Expanding action via school safety grant process to include all schools; work in progress

Status of 2018 Plan Actions			
Action ID	**Mitigation Project / Activity Description**	**Action Status (Continuing or Deleted)**	**Notes and Status Updates**
Southeast Polk Schools 5	Replace antiquated district surveillance cameras and install new systems in buildings without cameras	Contnuing	Expanding action via school safety grant process to include all schools; work in progress
Urbandale Schools 1	NOAA Weather Radios at District Buildings	Deleted	All schools except Olmsted, MetroWest and UHS currently have a weather radio
Urbandale Schools 2	Move Generator from Middle School to Jensen Elementary	Deleted	Project no longer feasible
Urbandale Schools 3	Implement Emergency Operations Plan	Continuing	Ongoing
Urbandale Schools 4	Safe Room at New Elementary School	Deleted	Completed at both new buildings. MetroWest's new location also has a safety room.
Urbandale Schools 5	"Safety Center" Electronic Safety Plan APP	Deleted	Project no longer feasible
Urbandale Schools 6	Ballistic film and Glazing	Continuing	Currently on the front of new elementary buildings. Preparing to add to Karen Acres. Also preparing to add to other locations at Olmsted. Valerius is pending.
Urbandale Schools 7	Digital Radios for District EOP Staff	Deleted	All administrators and other identified individuals have an updated working radio. There is a 911 channel as well as building specific channels. District level administrators have a universal radio that allows communication to all buildings.
Urbandale Schools 8	Internal Locking Capabilities at District Buildings	Continuing	In progress
Urbandale Schools 9	Sally Port at Karen Acres	Deleted	Project Completed
Urbandale Schools 10	Sally Port at MS	Deleted	Project Completed
Urbandale Schools 11	Sally Port at HS	Deleted	Project Completed

Status of 2018 Plan Actions			
Action ID	**Mitigation Project / Activity Description**	**Action Status (Continuing or Deleted)**	**Notes and Status Updates**
Urbandale Schools 12	Sally Port at Webster Elementary	Deleted	Project Completed
West Des Moines Schools 1	Installation of FEMA compliant safe rooms/areas in nine elementary school buildings.	Continuing	In progress; six of nine have been installed. Rewording action to reflect progress.
West Des Moines Schools 2	Installation of FEMA compliant safe rooms/areas in two Jr. High buildings and one Freshman High School.	Continuing	In progress; the freshman high school building project is complete, as is one of the two Jr. High School buildings; Rewording action to reflect progress.
West Des Moines Schools 3	Installation of generator(s) to serve the FEMA compliant safe rooms/areas in nine elementary buildings.	Continuing	Generators have been installed in the same six of the nine elementary schools that have had FEMA compliant safe rooms installed. Rewording action to reflect progress.
West Des Moines Schools 4	Installation of generator (s) to serve the FEMA compliant safe rooms/areas in two Jr. High buildings and one Freshman High School.	Continuing	Generators have been installed in one of the Jr. High buildings and the Freshman High School. Rewording action to reflect progress.

4.4. 2024 MITIGATION ACTION LIST

The table below provides a list of the mitigation actions that communities participating in this plan update hope to work towards over the next five years, including both continuing actions identfieid in the previous plan and new mitigation actions proposed during the update process. In addition to the 189 actions continued from the previous plan, 70 new actions were identified, for a combined total of 259 actions in this updated strategy. The participants are not committing to undertaking every action suggested in this list, but rather proposing an extensive list of *potential* actions that they may wish to pursue, depending in the availability of funding. The potential benefits and costs of each action was weighed when deciding whether or not to include it in the plan. However, a detailed and quantitative benefit-cost analysis will be performed prior to implementation of actions when additional detailed project cost information has been developed.

This plan update also includes county-wide actions (which are separate from unincorporated Polk County's actions), which apply to every participating jurisdiction. Some of these actions are included in this section because they are multi-jurisdictional, and some actions are listed as county-wide because the planning team identified a gap in the existing strategy (for example, hazards for which multiple communities had not yet identified specific actions, or actions that are of significant importance across the entire planning area). All planning committee members representing participating communities agree to be responsible for the implementation of these actions.

Note that Saylor Township's representatives determined that these county-wide actions sufficiently met their needs, and they did not wish to add any additional jurisdiction-specific actions to this plan.

While the table below analyzes a comprehensive range of mitigation actions, spanning many types of solutions, the "Project Type" column assigns each action to one of four general categories:

- Local Plans and Regulations
- Structure and Infrastructure Projects
- Natural Systems Protection
- Education and Awareness Programs

As mentioned above, and discussed in section 4.7, the process of determining which mitigation projects participating communities will ultimately apply funding for and pursue is more nuanced than the process of developing this action plan. However, for the purposes of assigning a general, high-level priority to each action in the table below, the following rubric was used:

- **High Priority (High):**
  - Saves lives, and either reduces property damage or reduces the need for response actions
- **Medium Priority (Medium):**
  - Saves lives, but does not reduce property damage or the need for response actions, **OR**
  - Does not save lives, but reduces property damage *and* reduces the need for response actions
- **Low Priority (Low)**: Achieves only *one* of the following
  - Reduce property damage
  - Reduce the need for response actions

Similarly, the "Expected Timeframe for Completion" estimate column is based on the following rubric:

- **Short Term:** Feasible to accomplish within the next two years
- **Medium-Term:** Feasible to accomplish within the next six years
- **Long-Term:** Expected to take longer than six years to complete

Table 129: 2024 Mitigation Action Plan

2024 Mitigation Action Plan										
Action ID	**Mitigation Project / Activity Description**	**Hazards Addressed**	**Impacts Existing or New Structures**	**Responsible Agency or Entity**	**Potential Funding Sources**	**Expected Time Frame for Completion**	**Project Type**	**Action Status (New or Continuing)**	**Goal #**	**Priority (H/M/L)**
County-Wide 1	Expand and improve municipal and county capacity to implement mitigation activities, particularly those items identified as unavailable in Chapter 2	Animal/plant/crop disease, climate change, cyberattack, dam failure, drought, earthquake, expansive soils, extreme temperatures, flash flooding, grass or wildland fire, hazardous materials incident, levee failure, river flooding, sinkholes/ landslides, structural fire, thunderstorm with lightning and hail, tornado, transportation incident, windstorm, winter storm	Both	All HMPC representatives from participating jurisdictions	City Budgets (general funds, Capital Improvement Funds) FEMA HMA Grants, EMPG Funding	Long-Term	Local Plans and Regulations	New	2, 3	High
County-Wide 2	Explore the possibility of conducting county-wide cyber security training, joint exercises, or vulnerability assessments	Cyberattacks, Infrastructure Failure	Existing	Polk County Emergency Management	City Budgets (general funds, Capital Improvement Funds), DHS and FEMA preparedness grants	Medium- Term	Education and Awareness Programs	New	2, 3	Low
County-Wide 3	Upgrade radio systems, fiber redundancy components, and CAD-to-CAD arrangements to increase interoperability	Animal/plant/crop disease, climate change, cyberattack, dam failure, drought, earthquake, expansive soils, extreme temperatures, flash flooding, grass or wildland fire, hazardous materials incident, levee failure, river flooding, sinkholes/ landslides, structural fire, thunderstorm with lightning and hail, tornado,	Both	All HMPC representatives from participating jurisdictions	City Budgets (general funds, Capital Improvement Funds), DHS and FEMA preparedness grants	Medium- Term	Structure and Infrastructure Projects	New	2, 3	Medium

2024 Mitigation Action Plan										
Action ID	**Mitigation Project / Activity Description**	**Hazards Addressed**	**Impacts Existing or New Structures**	**Responsible Agency or Entity**	**Potential Funding Sources**	**Expected Time Frame for Completion**	**Project Type**	**Action Status (New or Continuing)**	**Goal #**	**Priority (H/M/L)**
		transportation incident, windstorm, winter storm								
County-Wide 4	Improve and enhance flood alert early warning systems	River Flooding; Flash Flooding	Both	All HMPC representatives from participating jurisdictions	City Budgets (general funds, Capital Improvement Funds), DHS and FEMA preparedness grants	Medium- Term	Structure and Infrastructure Projects	New	1, 2, 3	Medium
County-Wide 5	Water System Load Demand Management Planning and Implementation	Drought	Both	All HMPC representatives from participating jurisdictions	City Budgets (general funds, Capital Improvement Funds), FEMA HMA Grants, City Budgets	Medium-Term	Local Plans and Regulations, Structure and Infrastructure Projects	New	2, 4	Medium
County-Wide 6	Overhead Electric System Management Planning and Implementation	Infrastructure Failure	Both	All HMPC representatives from participating jurisdictions	City Budgets (general funds, Capital Improvement Funds), FEMA HMA Grants, City Budgets	Medium-Term	Local Plans and Regulations, Structure and Infrastructure Projects	New	2, 3, 4, 3	Medium
County-Wide 7	Conduct annual regional preparedness exercise	Animal/plant/crop disease, climate change, cyberattack, dam failure, drought, earthquake, expansive soils, extreme temperatures, flash flooding, grass or wildland fire, hazardous materials incident, levee failure, river flooding, sinkholes/	Both	All HMPC representatives from participating jurisdictions	City Budgets (general funds, Capital Improvement Funds)	Long-Term	Local Plans and Regulations	New	2, 3	Medium

2024 Mitigation Action Plan										
Action ID	**Mitigation Project / Activity Description**	**Hazards Addressed**	**Impacts Existing or New Structures**	**Responsible Agency or Entity**	**Potential Funding Sources**	**Expected Time Frame for Completion**	**Project Type**	**Action Status (New or Continuing)**	**Goal #**	**Priority (H/M/L)**
		landslides, structural fire, thunderstorm with lightning and hail, tornado, transportation incident, windstorm, winter storm								
County-Wide 8	Partner with Iowa DNR to further assess dam-related risk, and to expand dam safety planning measures	Dam Failure	Existing	All HMPC representatives from participating jurisdictions	City Budgets (general funds, Capital Improvement Funds), FEMA Dam Safety Grants	Long-Term	Local Plans and Regulations	New	2	Medium
County-Wide 9	Maintain StormReady Community Designation	Flash Flooding, Thunderstorm with Lightning/Hail, Tornado, Windstorm	Both	All HMPC representatives from participating jurisdictions	City Budgets (general funds, Capital Improvement Funds)	Long-Term	Local Plans and Regulations	New	2	Medium
County-Wide 10	Educate the public about the presence of flooding hazards	Flash Flooding; River Flooding	Both	All HMPC representatives from participating jurisdictions	City Budgets (general funds, Capital Improvement Funds)	Long-Term	Local Plans and Regulations	New	2	Medium
County-Wide 11	Establish flood hazard disclosure processes, modeled after disclosure required by Iowa Admin Code r. 193E-14.1	Flash Flooding; River Flooding	Both	All HMPC representatives from participating jurisdictions	City Budgets (general funds, Capital Improvement Funds)	Long-Term	Local Plans and Regulations	New	2	Medium
County-Wide 12	Conduct watershed-based water quality management plans	Flash Flooding; River Flooding	Both	All HMPC representatives from participating jurisdictions	City Budgets (general funds, Capital Improvement Funds)	Long-Term	Local Plans and Regulations	New	2	Medium

2024 Mitigation Action Plan										
Action ID	**Mitigation Project / Activity Description**	**Hazards Addressed**	**Impacts Existing or New Structures**	**Responsible Agency or Entity**	**Potential Funding Sources**	**Expected Time Frame for Completion**	**Project Type**	**Action Status (New or Continuing)**	**Goal #**	**Priority (H/M/L)**
County-Wide 13	Provide staff training on hazard mitigation, floodplain management, substantial damage/substantial improvement processes, and damage assessment	Animal/plant/crop disease, climate change, cyberattack, dam failure, drought, earthquake, expansive soils, extreme temperatures, flash flooding, grass or wildland fire, hazardous materials incident, levee failure, river flooding, sinkholes/ landslides, structural fire, thunderstorm with lightning and hail, tornado, transportation incident, windstorm, winter storm	Both	All HMPC representatives from participating jurisdictions	City Budgets (general funds, Capital Improvement Funds)	Long-Term	Local Plans and Regulations	New	2, 3	Medium
County-Wide 25	Coordinate with Iowa State University Extension to educate the public about the risks associated with animal, plant, and crop diseases	Animal/ Plant/ Crop Disease	N/A	All HMPC representatives from participating jurisdictions	City Budgets (general funds, Capital Improvement Funds), County Funds; federal ag. grants	Medium-Term	Education and Awareness Programs	New	1, 3	Low
County-Wide 26	Coordinate with federal agencies and other partners to gather additional data about the expected impacts of climate change on the residents and industries of Polk County	Climate Change	N/A	All HMPC representatives from participating jurisdictions	City Budgets (general funds, Capital Improvement Funds), County Funds	Medium-Term	Local Plans and Regulations	New	1, 3	Low
County-Wide 27	Conduct a public education and outreach campaign to increase awareness of earthquake risks and best practices for safety	Earthquake	N/A	All HMPC representatives from participating jurisdictions	City Budgets (general funds, Capital Improvement Funds), FEMA HMA Grants	Medium-Term	Education and Awareness Programs	New	1	Low

2024 Mitigation Action Plan										
Action ID	Mitigation Project / Activity Description	Hazards Addressed	Impacts Existing or New Structures	Responsible Agency or Entity	Potential Funding Sources	Expected Time Frame for Completion	Project Type	Action Status (New or Continuing)	Goal #	Priority (H/M/L)
County-Wide 28	Conduct a public education and outreach campaign to increase awareness of the presence of expansive soils for homebuyers	Expansive Soils	N/A	All HMPC representatives from participating jurisdictions	City Budgets (general funds, Capital Improvement Funds); FEMA HMA Grants	Medium-Term	Education and Awareness Programs	New	1	Low
County-Wide 29	Conduct a public education and outreach campaign to increase awareness of extreme temperature risks and best practices for safety	Extreme Temperature	N/A	All HMPC representatives from participating jurisdictions	City Budgets (general funds, Capital Improvement Funds); FEMA HMA Grants	Medium-Term	Education and Awareness Programs	New	1	Low
County-Wide 30	Conduct a public education and outreach campaign to encourage hazardous fuels reduction and increase awareness of wildfire risks	Grass or Wildland Fire	N/A	All HMPC representatives from participating jurisdictions	City Budgets (general funds, Capital Improvement Funds); FEMA HMA Grants	Medium-Term	Education and Awareness Programs	New	1	Low
County-Wide 31	Continue to coordinate with Tier II Facility owners and LEPC to reduce hazardous material release or spill risk	Hazardous Materials	N/A	All HMPC representatives from participating jurisdictions	City Budgets (general funds, Capital Improvement Funds); FEMA HMA Grants	Medium-Term	Education and Awareness Programs	New	1, 2, 3	Medium
County-Wide 32	Conduct a public education and outreach campaign to encourage vaccinations, personal hygiene, and other disease risk reduction measures	Human Disease	N/A	All HMPC representatives from participating jurisdictions	City Budgets (general funds, Capital Improvement Funds)	Medium-Term	Education and Awareness Programs	New	1	Low
County-Wide 33	Conduct additional modeling to further understand the risks associated with Levee Failure in Polk County	Levee Failure	Both	All HMPC representatives from participating jurisdictions	City Budgets (general funds, Capital Improvement Funds)	Medium-Term	Local Plans and Regulations	New	2, 3	Low

2024 Mitigation Action Plan										
Action ID	Mitigation Project / Activity Description	Hazards Addressed	Impacts Existing or New Structures	Responsible Agency or Entity	Potential Funding Sources	Expected Time Frame for Completion	Project Type	Action Status (New or Continuing)	Goal #	Priority (H/M/L)
County-Wide 34	Conduct additional modeling to further understand the risks associated with Sinkholes and Landslides in Polk County	Sinkholes/ Landslide	Both	All HMPC representatives from participating jurisdictions	City Budgets (general funds, Capital Improvement Funds)	Medium-Term	Local Plans and Regulations	New	2, 3	Low
County-Wide 35	Conduct a public education and outreach campaign to teach residents about how to prevent (and stay safe in the event of) structural fires	Structural Fire	N/A	All HMPC representatives from participating jurisdictions	City Budgets (general funds, Capital Improvement Funds); FEMA HMA Grants	Medium-Term	Education and Awareness Programs	New	1	Low
County-Wide 36	Conduct studies to identify areas of highest traffic-related risk.	Transportation Incident	N/A	All HMPC representatives from participating jurisdictions	City Budgets (general funds, Capital Improvement Funds)	Long-Term	Local Plans and Regulations	New	2, 3	Low
County-Wide 37	Conduct a public education and outreach campaign to encourage residents to prepare for the impacts of winter storm (including reducing exposure risk and safe use of generators)	Winter Storm	N/A	All HMPC representatives from participating jurisdictions	City Budgets (general funds, Capital Improvement Funds); FEMA HMA Grants	Medium-Term	Education and Awareness Programs	New	1	Low
County-Wide 38	Host lunch-and-learn or similar events for elected and newly-elected public officials to educate them about the hazard mitigation plan and how they can support its implementation.	Animal/plant/crop disease, climate change, cyberattack, dam failure, drought, earthquake, expansive soils, extreme temperatures, flash flooding, grass or wildland fire, hazardous materials incident, levee failure, river flooding, sinkholes/ landslides, structural fire, thunderstorm with lightning and hail, tornado, transportation incident, windstorm, winter storm	N/A	All HMPC representatives from participating jurisdictions	City Budgets (general funds, Capital Improvement Funds)	Long-Term	Education and Awareness Programs	New	1, 2	Medium

2024 Mitigation Action Plan										
Action ID	Mitigation Project / Activity Description	Hazards Addressed	Impacts Existing or New Structures	Responsible Agency or Entity	Potential Funding Sources	Expected Time Frame for Completion	Project Type	Action Status (New or Continuing)	Goal #	Priority (H/M/L)
County-Wide 39	Explore opportunities to "Regionalize" public education and flood insurance coverage components of CRS participation	Flash Flooding, River Flooding	Both	All HMPC representatives from participating jurisdictions	City Budgets (general funds, Capital Improvement Funds), FEMA HMA Grants	Medium-Term	Local Plans and Regulations	New	1, 2, 3	Medium
Polk County 1	Continue to comply with the NFIP by enforcing floodplain management ordinance, including regulating/ monitoring new construction and substantial improvements in the SFHA; and participating in floodplain identification and mapping.	River Flooding	Both	Polk County Emergency Management	County General Operating Budget	Long-Term	Local Plans and Regulations	Continuing	2	Medium
Polk County 2	Construction of Storm Water Detention Basins, Buffer Strips, and Channel Improvements to Fourmile Creek though the Fourmile Creek Watershed Authority	Flash Flooding, River Flooding	Both	Polk County Emergency Management	FEMA HMA Grants	Long-Term	Structure and Infrastructure Projects, Natural Systems Protection	Continuing	4	Medium
Polk County 3	Construction of Storm Water Detention Basins, buffer Strips, and Channel Improvements to Mud, Camp, and Spring Creek watersheds though the Watershed Authority	Flash Flooding, River Flooding	Both	Polk County Emergency Management	FEMA HMA Grants	Long-Term	Structure and Infrastructure Projects, Natural Systems Protection	Continuing	4	Medium
Polk County 4	Construction of Storm Water Detention Basins, buffer Strips, and Channel Improvements to the Walnut Creek watershed though the Watershed Authority	Flash Flooding, River Flooding	Both	Polk County Emergency Management	FEMA HMA Grants	Long-Term	Structure and Infrastructure Projects, Natural Systems Protection	Continuing	4	Medium
Polk County 5	Construction of Storm Water Detention Basins, buffer Strips, and Channel Improvements to the Beaver Creek watershed though the Watershed Authority	Flash Flooding, River Flooding	Both	Polk County Emergency Management	FEMA HMA Grants	Long-Term	Structure and Infrastructure Projects, Natural Systems Protection	Continuing	4	Medium

2024 Mitigation Action Plan										
Action ID	Mitigation Project / Activity Description	Hazards Addressed	Impacts Existing or New Structures	Responsible Agency or Entity	Potential Funding Sources	Expected Time Frame for Completion	Project Type	Action Status (New or Continuing)	Goal #	Priority (H/M/L)
Polk County 6	Reconstruction of a Skunk River Crossing to assure emergency responders can cross the Skunk River during times of extreme flooding. In 2010, only one crossing in Polk County was open in a 30-mile section of the river.	River Flooding/ Infrastructure Failure/ Transportation Incident	Both	Polk County Emergency Management	FEMA HMA Grants	Long-Term	Structure and Infrastructure Projects	Continuing	4	High
Polk County 7	Construct severe weather safe rooms for Polk County Public Works Maintenance Facility	Thunderstorm with Lightning/Hail, Tornado	Existing	Polk County Emergency Management	FEMA HMA Grants	Medium- Term	Structure and Infrastructure Projects	Continuing	4	High
Polk County 8	Update siren software to polygon based system	Tornado	Existing	Polk County Emergency Management	FEMA EMPG Grants	Medium- Term	Structure and Infrastructure Projects	Continuing	1, 4	High
Polk County 9	Encourage additional Polk County communities to participate in the Community Rating System (CRS) program	Flash Flooding, River Flooding	Both	Polk County Emergency Management	HMA Grants (BRIC, HMGP 5% initiative)	Long-Term	Local Plans and Regulations	New	2	Medium
Polk County 10	Replace existing water distribution lines to eliminate possible contamination sources.	Flash Flooding, Hazardous Materials, Infrastructure Failure, River Flooding	Existing	Polk County Emergency Management	CDBG, Other Federal Infrastructure Grants	Long-Term	Structure and Infrastructure Projects	New	4	Low
Polk County 11	Address deficiencies to reduce risk associated with the Red Rock Dam – Avon Station Remedial Works	Dam Failure	Existing	All HMPC representatives from participating jurisdictions	FEMA HMA or HHPD Grants	Long-Term	Structure and Infrastructure Projects	New	4	High

2024 Mitigation Action Plan										
Action ID	Mitigation Project / Activity Description	Hazards Addressed	Impacts Existing or New Structures	Responsible Agency or Entity	Potential Funding Sources	Expected Time Frame for Completion	Project Type	Action Status (New or Continuing)	Goal #	Priority (H/M/L)
Polk County 12	Address deficiencies to reduce risk associated with the Red Rock – Carlisle Remedial Dam	Dam Failure	Existing	All HMPC representatives from participating jurisdictions	FEMA HMA or HHPD Grants	Long-Term	Structure and Infrastructure Projects	New	4	High
Alleman 1	Consider participation in the NFIP	River Flooding, Flash Flooding	Both	City Clerk	General Operating Budget	Medium-Term	Local Plans and Regulations	Continuing	2	Low
Altoona 1	Continue to comply with the NFIP by enforcing floodplain management ordinance, including regulating/ monitoring new construction and substantial improvements in the SFHA; and participating in floodplain identification and mapping.	River Flooding, Flash Flooding	Both	Fire Chief	General Operating Budget	Medium-Term	Local Plans and Regulations	Continuing	2	Low
Altoona 2	Stormwater detention basin improvement - Tuscany Pond; removed sediment from pond to regain capacity and construct new outfall.	Flash Flooding, Infrastructure Failure	Existing	Fire Chief	FEMA HMA Grants	Medium-Term	Structure and Infrastructure Projects	Continuing	4	High
Altoona 3	Secondary storm sewer installation	Flash flooding, Infrastructure Failure	New	Fire Chief	FEMA HMA Grants	Medium-Term	Structure and Infrastructure Projects	Continuing	4	Medium
Altoona 4	Storm sewer installation 4th St SW from Lion's Park to 5th Ave NW	Flash flooding, Infrastructure Failure	New	Fire Chief	FEMA HMA Grants	Medium-Term	Structure and Infrastructure Projects	Continuing	4	Medium

2024 Mitigation Action Plan										
Action ID	Mitigation Project / Activity Description	Hazards Addressed	Impacts Existing or New Structures	Responsible Agency or Entity	Potential Funding Sources	Expected Time Frame for Completion	Project Type	Action Status (New or Continuing)	Goal #	Priority (H/M/L)
Altoona 5	Adventureland Park Drainage Improvements - detention pond modifications, culvert improvements, stream bank stabilization	Flash flooding, Infrastructure Failure	Both	Fire Chief	FEMA HMA Grants	Medium-Term	Structure and Infrastructure Projects	Continuing	4	Medium
Altoona 6	4 Safe rooms for multiple park sites	Tornado	New	Fire Chief	FEMA HMA Grants	Short-Term	Structure and Infrastructure Projects	Continuing	4	High
Altoona 7	Replace 5 severe weather sirens	Tornado, Thunderstorm	Both	Fire Chief	FEMA HMA Grants	Short-Term	Structure and Infrastructure Projects	Continuing	1, 4	High
Altoona 8	Addition of 4 new severe weather sirens	Tornado, Thunderstorm	Both	Fire Chief	FEMA HMA Grants	Short-Term	Structure and Infrastructure Projects	Continuing	1, 4	High
Altoona 9	Construction of new Fire Station #26	Structural Fire	New	Fire Chief	Bonds; general Operating Budget	Medium-Term	Structure and Infrastructure Projects	Continuing	2	Low
Altoona 10	Sanitary sewer lining 5th Ave SW to 8th Ave SE, south of the railroad tracks	Infrastructure failure, Flash flooding	Existing	Fire Chief	General Operating Budget; Stormwater Fees	Medium-Term	Structure and Infrastructure Projects	Continuing	4	Low

2024 Mitigation Action Plan										
Action ID	Mitigation Project / Activity Description	Hazards Addressed	Impacts Existing or New Structures	Responsible Agency or Entity	Potential Funding Sources	Expected Time Frame for Completion	Project Type	Action Status (New or Continuing)	Goal #	Priority (H/M/L)
Altoona 11	Remove sump pump and footing tiles from sanitary sewers	Infrastructure failure, Flash flooding	Existing	Fire Chief	General Operating Budget; Stormwater Fees	Medium-Term	Structure and Infrastructure Projects	Continuing	4	Low
Altoona 12	New water treatment plant	Infrastructure failure	New	Fire Chief	Bond; General Operating Budget	Medium-Term	Structure and Infrastructure Projects	Continuing	2	Low
Altoona 13	New well	Infrastructure failure	New	Fire Chief	General Operating Budget; Stormwater Fees	Medium-Term	Structure and Infrastructure Projects	Continuing	2	Low
Altoona 14	Sanitary sewer lining all existing clay sewer mains	Infrastructure failure, Flash flooding	Existing	Fire Chief	General Operating Budget; Stormwater Fees	Medium-Term	Structure and Infrastructure Projects	Continuing	4	Low
Altoona 15	Dedicated safe rooms/tornado shelter for Sam Wise Park and Lions Park	Tornado	New	Fire Chief	FEMA HMA Grants	Short-Term	Structure and Infrastructure Projects	New	4	High
Ankeny 1	Construct safe room(s) at Mel Ray Mobile Home Park	Tornado	New	Fire Chief	FEMA HMA Grants	Short-Term	Structure and Infrastructure Projects	Continuing	4	High

2024 Mitigation Action Plan										
Action ID	Mitigation Project / Activity Description	Hazards Addressed	Impacts Existing or New Structures	Responsible Agency or Entity	Potential Funding Sources	Expected Time Frame for Completion	Project Type	Action Status (New or Continuing)	Goal #	Priority (H/M/L)
Ankeny 2	Construct safe room(s) at Autumn Ridge Mobile Home Park	Tornado	New	Fire Chief	FEMA HMA Grants	Short-Term	Structure and Infrastructure Projects	Continuing	4	High
Ankeny 3	Sawgrass Park Dam Improvements	Flash Flooding	Existing	Fire Chief	FEMA HMA Grants	Medium-Term	Structure and Infrastructure Projects	Continuing	4	Medium
Ankeny 4	Saylor Creek Tributary Channel Improvements	Flash Flooding,	Existing	Fire Chief	FEMA HMA Grants	Medium-Term	Structure and Infrastructure Projects	Continuing	4	Medium
Ankeny 5	Storm sewer/channel improvements Four Mile Creek bank stabilization	Flash Flooding	Existing	Fire Chief	FEMA HMA Grants	Medium-Term	Structure and Infrastructure Projects	Continuing	4	Medium
Ankeny 6	Continue to comply with the NFIP by enforcing floodplain management ordinance, including regulating/ monitoring new construction and substantial improvements in the SFHA; and participating in floodplain identification and mapping.	River Flooding	Existing	Fire Chief	FEMA HMA Grants	Medium-Term	Structure and Infrastructure Projects	Continuing	1, 2	Low
Ankeny 7	Briarwood Sanitary Sewer Upsizing / Replacement	Flash Flooding	New	Fire Chief	FEMA HMA Grants	Medium-Term	Structure and Infrastructure Projects	Continuing	4	Medium

2024 Mitigation Action Plan										
Action ID	Mitigation Project / Activity Description	Hazards Addressed	Impacts Existing or New Structures	Responsible Agency or Entity	Potential Funding Sources	Expected Time Frame for Completion	Project Type	Action Status (New or Continuing)	Goal #	Priority (H/M/L)
Ankeny 8	Central City Areas - Sewer Upsizing and Replacements	Flash Flooding	New	Fire Chief	FEMA HMA Grants	Medium-Term	Structure and Infrastructure Projects	Continuing	4	Medium
Ankeny 9	Construct safe room(s) at On With Life Care Facility	Tornado	New	Fire Chief	FEMA HMA Grants	Medium-Term	Structure and Infrastructure Projects	Continuing	4	High
Ankeny 10	Storm Sewer Improvements – Westlawn Area	Flash Flooding	Existing	Fire Chief	FEMA HMA Grants	Medium-Term	Structure and Infrastructure Projects	New	4	Medium
Ankeny 11	Diamond Hills Greenbelt Corridor Stabilization & Improvements	Flash Flooding	Existing	Fire Chief	FEMA HMA Grants	Medium-Term	Structure and Infrastructure Projects	New	4	Medium
Ankeny 12	Northview Middle School Potential Detention Area	Flash Flooding	New	Fire Chief	FEMA HMA Grants	Medium-Term	Structure and Infrastructure Projects	New	4	Medium
Ankeny 13	Potential NW 36th Detention Area	Flash Flooding	New	Fire Chief	FEMA HMA Grants	Medium-Term	Structure and Infrastructure Projects	New	4	Medium

2024 Mitigation Action Plan										
Action ID	Mitigation Project / Activity Description	Hazards Addressed	Impacts Existing or New Structures	Responsible Agency or Entity	Potential Funding Sources	Expected Time Frame for Completion	Project Type	Action Status (New or Continuing)	Goal #	Priority (H/M/L)
Ankeny 14	Potential NE 18th Detention Area	Flash Flooding	New	Fire Chief	FEMA HMA Grants	Medium-Term	Structure and Infrastructure Projects	New	4	Medium
Ankeny 15	Rock Creek Stabilization between NW Somerset Ct & NW 13th St.	Flash Flooding, River Flooding	New	Fire Chief	FEMA HMA Grants	Medium-Term	Structure and Infrastructure Projects	New	4	Medium
Ankeny 16	Autumn Ridge Estates Drainage Improvements	Flash Flooding	Existing	Fire Chief	FEMA HMA Grants	Medium-Term	Structure and Infrastructure Projects	New	4	Medium
Ankeny 17	Terrace/NW 9th St. & N. Ankeny Blvd Storm Sewer Improvements	Flash Flooding	Existing	Fire Chief	FEMA HMA Grants	Medium-Term	Structure and Infrastructure Projects	New	4	Medium
Ankeny 18	SE Cortina Dr. Storm Sewer Improvements	Flash Flooding	Existing	Fire Chief	FEMA HMA Grants	Medium-Term	Structure and Infrastructure Projects	New	4	Medium
Bondurant 1	Update tornado warning system	Tornado	Both	Emergency Services	FEMA HMA Grants	Short-Term	Hazard Mitigation Plan	Continuing	1	High

2024 Mitigation Action Plan										
Action ID	Mitigation Project / Activity Description	Hazards Addressed	Impacts Existing or New Structures	Responsible Agency or Entity	Potential Funding Sources	Expected Time Frame for Completion	Project Type	Action Status (New or Continuing)	Goal #	Priority (H/M/L)
Bondurant 2	Generator at Public Safety Building	Windstorms/Rolling Power Outages	Existing	Emergency Services	FEMA HMA Grants	Short-Term	Hazard Mitigation Plan	Continuing	1	Medium
Bondurant 3	NW 2nd St. Culvert Expansion	Flooding	Existing/New	Emergency Services	FEMA HMA Grants	Medium-Term	Hazard Mitigation Plan	Continuing	1	Medium
Bondurant 4	15th St. SW Bridge Replacement	Flooding	Existing/New	Emergency Services	Federal Infrastructure Grants, FEMA HMA Grants	Long-Term	Hazard Mitigation Plan	Continuing	1	Medium
Bondurant 5	Mud Creek Channel Restoration	Flooding	Existing	Emergency Services	FEMA HMA Grants	Medium-Term	Hazard Mitigation Plan	Continuing	1	Medium
Bondurant 6	Mud Creek Regional Detention Facility/Grant St. South Relocation	Flooding/ Regional Water Quality	New Structure	Emergency Services	FEMA HMA Grants	Medium-Term	Hazard Mitigation Plan	Continuing	1	Medium
Bondurant 7	Continue to comply with the NFIP by enforcing floodplain management ordinance, including regulating/ monitoring new construction and substantial improvements in the SFHA; and participating in floodplain identification and mapping.	River Flooding	Existing and New	Emergency Services	General Operating Budget; Stormwater Utility Funds	Long-Term	NFIP floodplain \mgt. program	Continuing	1	High

2024 Mitigation Action Plan										
Action ID	Mitigation Project / Activity Description	Hazards Addressed	Impacts Existing or New Structures	Responsible Agency or Entity	Potential Funding Sources	Expected Time Frame for Completion	Project Type	Action Status (New or Continuing)	Goal #	Priority (H/M/L)
Clive 1	Install/Replace backup generators	Animal/plant/crop disease, climate change, cyberattack, dam failure, drought, earthquake, expansive soils, extreme temperatures, flash flooding, grass or wildland fire, hazardous materials incident, levee failure, river flooding, sinkholes/ landslides, structural fire, thunderstorm with lightning and hail, tornado, transportation incident, windstorm, winter storm	Both	City Managers Office (CMO)	FEMA HMA Grants, General Fund	Short-Term	Structure and Infrastructure Projects	Continuing	4	High
Clive 2	Enhance communications (including website, social media, print media, etc) used to articulat risk and provide warning, including capacity for communicating with vulnerable populations	Animal/plant/crop disease, climate change, cyberattack, dam failure, drought, earthquake, expansive soils, extreme temperatures, flash flooding, grass or wildland fire, hazardous materials incident, levee failure, river flooding, sinkholes/ landslides, structural fire, thunderstorm with lightning and hail, tornado, transportation incident, windstorm, winter storm	Both	City Managers Office (CMO)	FEMA HMA Grants, General Fund	Medium-Term	Education and Awareness Programs [Public Information]	Continuing	1, 2	High
Clive 3	Walnut Creek Watershed Streambank/ Buffers/ Wetlands/ Stormwater/ Flood Control Improvements	River Flooding	Existing	Community Development	FEMA HMA Grants, Stormwater Utility	Medium-Term	Structure and Infrastructure Projects [Structural Project]	Continuing	4	Medium

2024 Mitigation Action Plan										
Action ID	Mitigation Project / Activity Description	Hazards Addressed	Impacts Existing or New Structures	Responsible Agency or Entity	Potential Funding Sources	Expected Time Frame for Completion	Project Type	Action Status (New or Continuing)	Goal #	Priority (H/M/L)
Clive 4	Reconstruct Greenbelt Trail bridges	River Flooding	Existing	Leisure Services	FEMA HMA Grants, Debt Service	Medium-Term	Structure and Infrastructure Projects [Structural Project]	Continuing	4	Medium
Clive 5	Reconstruct NW 86th Street bridge	River Flooding	Existing	Public Works	FEMA HMA Grants, STP, Debt Service	Long-Term	Structure and Infrastructure Projects [Structural Project]	Continuing	4	Low
Clive 6	Reconstruct railroad bridge (7800 block University Blvd)	River Flooding	Existing	Public Works	FEMA HMA Grants, STP, Debt Service	Long-Term	Structure and Infrastructure Projects [Structural Project]	Continuing	4	Low
Clive 7	Walnut Creek floodplain acquisitions	River Flooding	Existing	Community Development	FEMA HMA Grants, REAP, Debt Service	Long-Term	Structure and Infrastructure Projects [Natural Resource Protection]	Continuing	4	High
Clive 8	North Walnut Creek floodplain acquisitions	River Flooding	Existing	Community Development	FEMA HMA Grants, REAP, Debt Service	Long-Term	Structure and Infrastructure Projects [Natural Resource Protection]	Continuing	4	High
Clive 9	University Blvd Neighborhood Flood Mitigation Planning and Implementation	River Flooding	Existing	Community Development	FEMA HMA Grants, Stormwater Utility, Debt Service	Long-Term	Structure and Infrastructure Projects; Local Plans and Regulations [Property Protection]	Continuing	2, 4	High

2024 Mitigation Action Plan										
Action ID	Mitigation Project / Activity Description	Hazards Addressed	Impacts Existing or New Structures	Responsible Agency or Entity	Potential Funding Sources	Expected Time Frame for Completion	Project Type	Action Status (New or Continuing)	Goal #	Priority (H/M/L)
Clive 10	Indian Hills Neighborhood Flood Mitigation Planning and Implementation	River Flooding	Existing	Community Development	FEMA HMA Grants, Stormwater Utility	Long-Term	Structure and Infrastructure Projects; Local Plans and Regulations [Property Protection]	Continuing	2, 4	High
Clive 11	Relocation of Porter Park Shelter	River Flooding	Both	Leisure Services	FEMA HMA Grants, REAP, SWU, Debt Service	Medium-Term	Structure and Infrastructure Projects [Preventive]	Continuing	4	High
Clive 12	Swanson Blvd Flapgates	River Flooding	Existing	Public Works	FEMA HMA Grants, SWU	Medium-Term	Structure and Infrastructure Projects [Structural Project]	Continuing	4	High
Clive 13	Regional Stormwater Management Facilities (modifications)	River Flooding	Existing	Public Works	FEMA HMA Grants, SWU, DS	Medium-Term	Structure and Infrastructure Projects [Structural Project]	Continuing	4	Medium
Clive 14	Construction of Stormwater Detention Basins, Flood Control Facilities, Buffer Strips, and Channel Improvements in Walnut Creek and North Raccoon Watersheds through the partnerships with Watershed Authority	River Flooding	New	Community Development	FEMA HMA Grants, SWU, DS	Medium-Term	Structure and Infrastructure Projects	Continuing	4	Medium
Clive 15	North Racoon River Watershed Streambank/ Buffers/ Wetlands/ Stormwater/ Flood Control Improvements	River Flooding	New	Community Development	FEMA HMA Grants, SWU, DS	Medium-Term	Structure and Infrastructure Projects	New	4	Medium

2024 Mitigation Action Plan										
Action ID	Mitigation Project / Activity Description	Hazards Addressed	Impacts Existing or New Structures	Responsible Agency or Entity	Potential Funding Sources	Expected Time Frame for Completion	Project Type	Action Status (New or Continuing)	Goal #	Priority (H/M/L)
Clive 16	Update Flood Response and Recovery Plan	River Flooding, Flash Flooding	Both	Fire	FEMA Preparedness Grants, EMPG, General Fund	Medium-Term	Local Plans and Regulations [Emergency Services]	New	2	Medium
Clive 17	Floodplain Vegetation Management Planning and Implementation	River Flooding, Grass or Wildland Fire	Both	Leisure Services	FEMA HMA Grants, REAP, SWU, DS	Medium-Term	Local Plans and Regulations, Natural Systems Protection [Natural Resource Protection]	New	2, 4	Medium
Clive 18	Update City Technology Plan to reduce vulnerability to cyber threats	Cyberattacks	Both	CMO	General Operating Budget; Federal Cyber Security Grants	Long-Term	Local Plans and Regulations	New	2	Low
Clive 19	Update and enforce building codes	Animal/plant/crop disease, climate change, cyberattack, dam failure, drought, earthquake, expansive soils, extreme temperatures, flash flooding, grass or wildland fire, hazardous materials incident, levee failure, river flooding, sinkholes/ landslides, structural fire, thunderstorm with lightning and hail, tornado, transportation incident, windstorm, winter storm	Both	Community Development	FEMA HMA Grants, General Fund	Long-Term	Local Plans and Regulations	New	2	Medium
Clive 20	Update floodplain development regulations	Animal/plant/crop disease, climate change, cyberattack, dam failure, drought, earthquake, expansive soils, extreme temperatures, flash	Both	Community Development	FEMA HMA Grants, SWU, General Fund	Long-Term	Local Plans and Regulations [Preventive]	New	2	Medium

2024 Mitigation Action Plan										
Action ID	**Mitigation Project / Activity Description**	**Hazards Addressed**	**Impacts Existing or New Structures**	**Responsible Agency or Entity**	**Potential Funding Sources**	**Expected Time Frame for Completion**	**Project Type**	**Action Status (New or Continuing)**	**Goal #**	**Priority (H/M/L)**
		flooding, grass or wildland fire, hazardous materials incident, levee failure, river flooding, sinkholes/ landslides, structural fire, thunderstorm with lightning and hail, tornado, transportation incident, windstorm, winter storm								
Clive 21	Building Energy Efficiency planning and implementation (ie: renewal systems for redundancy)	Animal/plant/crop disease, climate change, cyberattack, dam failure, drought, earthquake, expansive soils, extreme temperatures, flash flooding, grass or wildland fire, hazardous materials incident, levee failure, river flooding, sinkholes/ landslides, structural fire, thunderstorm with lightning and hail, tornado, transportation incident, windstorm, winter storm	Both	CMO	FEMA HMA Grants, Federal Resiliency Grants, DS	Medium-Term	Local Plans and Regulations, Structure and Infrastructure Projects	New	2, 4	Medium
Clive 22	Backflow Prevention (sewer drains)	Flash Flooding	Both	Public Works	FEMA HMA Grants, Sanitary Sewer Utility, DS	Medium-Term	Structure and Infrastructure Projects [Property Protection]	New	4	Medium
Clive 23	Forestry Management Plan and implementation	River Flooding, Extreme Temperature, Grass or Widland Fire	Both	Leisure Services	FEMA HMA Grants, REAP, Federal Resiliency Grants	Medium-Term	Local Plans and Regulations, Natural Systems Protection [Preventive]	New	2, 4	Medium

2024 Mitigation Action Plan										
Action ID	Mitigation Project / Activity Description	Hazards Addressed	Impacts Existing or New Structures	Responsible Agency or Entity	Potential Funding Sources	Expected Time Frame for Completion	Project Type	Action Status (New or Continuing)	Goal #	Priority (H/M/L)
Clive 24	Sub-watershed stormwater/flooding planning and implementation	Flash Flooding	Both	Public Works	FEMA HMA Grants, SWU, DS	Medium-Term	Local Plans and Regulations, Structure and Infrastructure Projects [Property Protection]	New	2, 4	Medium
Clive 25	Relocate University Boulevard Pump Station from 100-year floodplain	Flooding	Existing	Public Works	FEMA HMA Grants, SWU, DS	Long-Term	Structure and Infrastructure Projects [Preventive]	New	4	Medium
Clive 26	Mitigate flooding threat to public works facilities in the 100-year floodplain	Flooding	Existing	Public Works	FEMA HMA Grants, SWU, DS	Long-Term	Structure and Infrastructure Projects [Preventive]	New	4	Medium
Clive 27	Mitigate flooding threat to Aquatics Center	Flooding	Existing	Leisure Services	FEMA HMA Grants, SWU, DS	Long-Term	Structure and Infrastructure Projects [Preventive]	New	4	Medium
Clive 28	Stormwater detention basin maintenance planning and implementation	Flash Flooding	Both	Public Works	SWU, DS	Medium-Term	Local Plans and Regulations, Structure and Infrastructure Projects [Property Protection]	New	2, 4	Medium
Clive 29	Obtain CRS Class 4 Status	Flooding, Flash Flooding	Both	Community Development	General Operating Budget	Medium-Term	Local Plans and Regulations [Public Information]	New	2	Medium

2024 Mitigation Action Plan										
Action ID	Mitigation Project / Activity Description	Hazards Addressed	Impacts Existing or New Structures	Responsible Agency or Entity	Potential Funding Sources	Expected Time Frame for Completion	Project Type	Action Status (New or Continuing)	Goal #	Priority (H/M/L)
Clive 30	Drainage System (natural/human made) Maintenance planning and implementation	Flooding, Flash Flooding	Both	Public Works	General Operating Budget; Stormwater Utility Fees	Medium-Term	Local Plans and Regulations	New	2	Low
Clive 31	Natural Floodplain Function planning and implementation	Flooding, Flash Flooding	Both	Community Development	General Operating Budget	Long-Term	Local Plans and Regulations [Natural Resource Protection]	New	2	Low
Clive 32	Flood Insurance Coverage planning and implementation	Flooding, Flash Flooding	Both	Community Development	General Operating Budget	Long-Term	Local Plans and Regulations [Preventive]	New	2	Low
Clive 33	Maintain BCEGS 3/4 Rating	Animal/plant/crop disease, climate change, cyberattack, dam failure, drought, earthquake, expansive soils, extreme temperatures, flash flooding, grass or wildland fire, hazardous materials incident, levee failure, river flooding, sinkholes/ landslides, structural fire, thunderstorm with lightning and hail, tornado, transportation incident, windstorm, winter storm	Both	Community Development	General Operating Budget	Long-Term	Local Plans and Regulations	New	2	Low
Clive 34	Partner with the State of Iowa (IDNR Dam Safety division) and Country Club Homeowners Association to ensure monitoring of the physical and structural components of the Clive	Dam Failure	Existing	Community Development	General Operating Budget; Stormwater Utility Fees	Long-Term	Education and Outreach	New	4	Low

2024 Mitigation Action Plan										
Action ID	Mitigation Project / Activity Description	Hazards Addressed	Impacts Existing or New Structures	Responsible Agency or Entity	Potential Funding Sources	Expected Time Frame for Completion	Project Type	Action Status (New or Continuing)	Goal #	Priority (H/M/L)
	Lake Dam to reduce risks associated with dam failure.									
Des Moines 1	Pursue remedial flood mitigation actions associated with the Southeast Des Moines (SEDM) Levee, US 65	River Flooding	Existing	Engineering Department	Capital Improvements Program; FEMA HMA Grants	Medium-Term	Structure and Infrastructure Projects	Continuing	4	High
Des Moines 2	Comply with the NFIP by enforcing floodplain management ordinance, including regulating/ monitoring new construction and substantial improvements in the SFHA; and participating in floodplain identification and mapping.	River Flooding	Both	Engineering Department	Operating Budget	Long-Term	Local Plans and Regulations	Continuing	2	High
Des Moines 3	Construct safe room(s) at Des Moines Municipal Housing Agency's multi-family units	Windstorms	Existing and New	Engineering Department	Capital Improvements Program; FEMA HMA Grants	Long-Term	Structure and Infrastructure Projects	Continuing	4	High
Des Moines 4	Treatment and removal of ash trees in response to onset of Emerald Ash Borer (EAB)	Animal/Crop/Plant Disease	Existing	Engineering Department	Capital Improvements Program	Medium-Term	Natural Systems Protection	Continuing	4	Medium
Des Moines 5	Des Moines River Flood Mitigation Improvements - Flood protection system improvements (levees, floodwalls, pump stations, etc.) to maintain FEMA accreditation despite increased flows identified in 2011 Des	River Flooding	Existing	Engineering Department	Capital Improvements Program; FEMA HMA Grants	Long-Term	Structure and Infrastructure Projects	Continuing	4	High

2024 Mitigation Action Plan										
Action ID	**Mitigation Project / Activity Description**	**Hazards Addressed**	**Impacts Existing or New Structures**	**Responsible Agency or Entity**	**Potential Funding Sources**	**Expected Time Frame for Completion**	**Project Type**	**Action Status (New or Continuing)**	**Goal #**	**Priority (H/M/L)**
	Moines River Regulated Flow Frequency Study.									
Des Moines 6	Hamilton Drainage Area Stormwater Improvements - Storm sewer conveyance improvements to Increase storm sewer capacity and/or construct detention/G.I. to reduce identified flood risk concerns.	Flash Flooding	Existing	Engineering Department	Capital Improvements Program; FEMA HMA Grants	Long-Term	Structure and Infrastructure Projects	Continuing	4	High
Des Moines 7	Closes Creek Stormwater Improvements - Increase storm sewer capacity and/or construct detention/G.I. to reduce identified flood risk concerns	Flash Flooding	Existing	Engineering Department	Capital Improvements Program; FEMA HMA Grants	Long-Term	Structure and Infrastructure Projects	Continuing	4	Medium
Des Moines 8	Crawford Creek Stormwater Improvements - Increased storm sewer capacity and/or construct detention/G.I. to reduce identified flood risk concerns	Flash Flooding	Existing	Engineering Department	Capital Improvements Program; FEMA HMA Grants	Long-Term	Structure and Infrastructure Projects	Continuing	4	Medium
Des Moines 9	Sanitary Sewer Separation Projects - Install storm sewer to eliminate CSO's that discharge sanitary water to the river	Public Health	Existing	Engineering Department	Capital Improvements Program; FEMA HMA Grants	Long-Term	Structure and Infrastructure Projects	Continuing	4	Medium
Des Moines 10	City-wide Small Watershed Flood Mitigation Projects - Identify and construct projects that increase storm sewer capacity and/or construct detention/G.I. to reduce flood risk concerns	Flash Flooding	Existing	Engineering Department	Capital Improvements Program; FEMA HMA Grants; Local Options Sales & Service Tax	Long-Term	Structure and Infrastructure Projects	Continuing	4	Medium

2024 Mitigation Action Plan										
Action ID	Mitigation Project / Activity Description	Hazards Addressed	Impacts Existing or New Structures	Responsible Agency or Entity	Potential Funding Sources	Expected Time Frame for Completion	Project Type	Action Status (New or Continuing)	Goal #	Priority (H/M/L)
Des Moines 11	Storm Water Pump Station Rehabilitation - Updates to pump stations to provide resiliency	Public Safety	Existing	Engineering Department	Capital Improvements Program; FEMA HMA Grants	Medium-Term	Structure and Infrastructure Projects	Continuing	4	Medium
Des Moines 12	Voluntary acquisition and demolition of all single and two-family residential structures in the floodplain and repetitive loss properties. Estimated 220 structures would be acquired.	River/Creek Flooding	Existing	Engineering Department	Capital Improvements Program; FEMA HMA Grants; Local Option Sales & Service Tax	Long-Term	Structure and Infrastructure Projects	Continuing	1	High
Des Moines 13	Construct safe room in new fire station(s)	Windstorms / Tornado	New	Engineering Department	Capital Improvements Program; FEMA HMA Grants	Medium-Term	Structure and Infrastructure Projects	Continuing	4	High
Des Moines 14	Generator for new fire station(s)	Windstorms / Tornado / Winter Storm	New	Engineering Department	Capital Improvements Program; FEMA HMA Grants	Medium-Term	Structure and Infrastructure Projects	Continuing	4	Medium
Des Moines 15	Construct safe room or storm shelter for new city administration building	Windstorms / Tornado	New	Engineering Department	Capital Improvements Program; FEMA HMA Grants	Medium-Term	Structure and Infrastructure Projects	Continuing	4	High
Des Moines 16	Generator and 72-hour fuel storage for new city administration building	Windstorms / Tornado / Winter Storm	New	Engineering Department	Capital Improvements Program; FEMA HMA Grants	Medium-Term	Structure and Infrastructure Projects	Continuing	4	Medium

2024 Mitigation Action Plan										
Action ID	Mitigation Project / Activity Description	Hazards Addressed	Impacts Existing or New Structures	Responsible Agency or Entity	Potential Funding Sources	Expected Time Frame for Completion	Project Type	Action Status (New or Continuing)	Goal #	Priority (H/M/L)
Des Moines 17	Building inventory for Fire Dept. community risk assessment / analysis	Public Safety, Fire / Hazmat	Existing and New	Engineering Department	Capital Improvements Program	Short-Term	Local Plans and Regulations	Continuing	2	Medium
Des Moines 18	Damage assessment data collection tools and standard operating procedures during and after emergency events	Public Safety / Flooding / Tornado / Winter Storm	Existing	Engineering Department	Capital Improvements Program; Operating Budget	Long-Term	Local Plans and Regulations	Continuing	2	Low
Des Moines 19	Address physical and structural deficiencies to reduce risk associated with the Easter Lake Stormwater Retention Basin and maintain its satisfactory condition.	Dam Failure	Existing	Engineering Department	FEMA HMA or HHPD Grants	Long-Term	Structure and Infrastructure Projects	New	4	High
Des Moines 20	Address physical and structural deficiencies to reduce risk associated with the Fort Des Moines Park Dam and raise its structural condition from fair to satisfactory.	Dam Failure	Existing	Engineering Department	FEMA HMA or HHPD Grants	Long-Term	Structure and Infrastructure Projects	New	4	High
Des Moines 21	Address physical and structural deficiencies to reduce risk associated with the Twenty-Sixth Street Stormwater Detention Basin and maintain its satisfactory condition.	Dam Failure	Existing	Engineering Department	FEMA HMA or HHPD Grants	Long-Term	Structure and Infrastructure Projects	New	4	High
Des Moines 22	Conduct a public education and outreach campaign to increase awareness of the risks of dam failure within the inundation zones of Easter Lake Stormwater Retention Basin, Fort Des Moines Park Dam, Red Rock Dam – Avon Station, Red Rock Dam – Carlisle Remedial Dam, Saylorville	Dam Failure	Existing	Engineering Department	FEMA HMA or HHPD Grants	Long-Term	Education and Awareness	New	4	High

2024 Mitigation Action Plan										
Action ID	**Mitigation Project / Activity Description**	**Hazards Addressed**	**Impacts Existing or New Structures**	**Responsible Agency or Entity**	**Potential Funding Sources**	**Expected Time Frame for Completion**	**Project Type**	**Action Status (New or Continuing)**	**Goal #**	**Priority (H/M/L)**
	Dam, and Twenty-Sixth Street Stormwater Detention Basin.									
Elkhart 1	Construct safe room at Elkhart Memorial Park	Windstorms	New	Fire Department	BRIC; HMGP; Community donations	Medium-Term	Structure and Infrastructure Projects	Continuing	4	High
Elkhart 2	Construct safe room in NEW fire station	Windstorms	New	Fire Department	BRIC; HMGP; Community donations	Medium-Term	Structure and Infrastructure Projects	Continuing	4	High
Elkhart 3	Generator for new fire station	Windstorms	New	Fire Department	HMGP 5%; Community donations	Medium-Term	Structure and Infrastructure Projects	Continuing	4	Medium
Elkhart 4	Generator at city water plant	Windstorms	Existing	Fire Department	HMGP 5%; Community donations	Medium-Term	Structure and Infrastructure Projects	Continuing	4	Medium
Elkhart 5	Construct safe room at Elkhart Community Center	Windstorms	Existing	Fire Department	BRIC; HMGP; Community donations	Medium-Term	Structure and Infrastructure Projects	Continuing	4	High

2024 Mitigation Action Plan										
Action ID	Mitigation Project / Activity Description	Hazards Addressed	Impacts Existing or New Structures	Responsible Agency or Entity	Potential Funding Sources	Expected Time Frame for Completion	Project Type	Action Status (New or Continuing)	Goal #	Priority (H/M/L)
Grimes 1	Generators at City Hall	Windstorms	Existing	Fire Chief	FEMA HMA Grants	Medium-Term	Structure and Infrastructure Projects	Continuing	4	Medium
Grimes 2	Generator at fire station	Windstorms	Existing	Fire Chief	FEMA HMA Grants	Medium-Term	Structure and Infrastructure Projects	Continuing	4	High
Grimes 3	Continue to comply with the NFIP by enforcing floodplain management ordinance, including regulating/ monitoring new construction and substantial improvements in the SFHA; and participating in floodplain identification and mapping.	River Flooding	Existing and New	Fire Chief	General Fund; Stormwater Enterprise Fund	Long-Term	Local Plans and Regulations	Continuing	2	Low
Grimes 4	Install four additional outdoor warning sirens to cover newly annexed areas and key outdoor spaces	Tornado	New	Fire Chief	FEMA HMA Grants	Medium-Term	Structure and Infrastructure Projects	New	4	High
Grimes 5	Conduct a public education and outreach campaign to increase awareness of the risks of dam failure within the inundation zones of Saylorville Dam.	Dam Failure	Existing	Fire Chief	FEMA HMA Grants	Medium-Term	Education and Outreach	New	4	Medium
Grimes 6	Identify and acquire flood-prone properties and to convert them to green space in perpetuity, eliminating risk of future structural damage.	River Flooding, Flash Flooding	New	Fire Chief	Stomwater Enterprise Fund; Capital Improvements Projects Fund;	Medium-Term	Structure and Infrastructure Projects	New	2, 4	High

2024 Mitigation Action Plan										
Action ID	Mitigation Project / Activity Description	Hazards Addressed	Impacts Existing or New Structures	Responsible Agency or Entity	Potential Funding Sources	Expected Time Frame for Completion	Project Type	Action Status (New or Continuing)	Goal #	Priority (H/M/L)
					FEMA HMA Grants					
Johnston 1	Construct Detention Basin Northglenn Neighborhood West of Merle Hay Road	River Flooding, Flash Flooding	New	Fire Chief	Storm Water Funds; Capital Improvements Budget; FEMA HMA Grants	Medium-Term	Structure and Infrastructure Projects	Continuing	4	Medium
Johnston 2	Extend 72" Storm Sewer Pipe under Johnston Drive	River Flooding, Flash Flooding	New	Fire Chief	Storm Water Funds; Capital Improvements Budget; FEMA HMA Grants	Medium-Term	Structure and Infrastructure Projects	Continuing	4	Medium
Johnston 3	Construct flood control structure on Johnston Drive	River Flooding, Flash Flooding	New	Fire Chief	Storm Water Funds; Capital Improvements Budget; FEMA HMA Grants	Medium-Term	Structure and Infrastructure Projects	Continuing	4	Medium
Johnston 4	Multi-purpose Safe Room at Lew Clarkson Park	Tornado	New	Fire Chief	Capital Improvements Budget; FEMA HMA Grants	Medium-Term	Structure and Infrastructure Projects	Continuing	4	High
Johnston 5	Continue to work with Iowa DOT to eliminate flooding at Northwest Beaver Drive (water impounded since the 2008 flood may be affecting the water table and may be polluted)	River Flooding, Flash Flooding	Both	Fire Chief	Storm Water Funds; Capital Improvements Budget; FEMA HMA Grants	Long-Term	Structure and Infrastructure Projects	Continuing	4	High

2024 Mitigation Action Plan										
Action ID	Mitigation Project / Activity Description	Hazards Addressed	Impacts Existing or New Structures	Responsible Agency or Entity	Potential Funding Sources	Expected Time Frame for Completion	Project Type	Action Status (New or Continuing)	Goal #	Priority (H/M/L)
Johnston 6	Conduct flood impact study on Merle Hay and Beaver Creek area	River Flooding, Flash Flooding	Both	Fire Chief	Storm Water Fund; FEMA HMA Grants	Medium-Term	Local Plans and Regulations	Continuing	2	Medium
Johnston 7	Continue to comply with the NFIP by enforcing floodplain management ordinance, including regulating/ monitoring new construction and substantial improvements in the SFHA; and participating in floodplain identification and mapping.	River Flooding, Flash Flooding	Both	Fire Chief	Storm Water Funds; City General Budget	Long-Term	Local Plans and Regulations	Continuing	2	Medium
Johnston 8	Install New Warning Sirens to cover newly annexed property to north and west of Johnston	Tornado, Thunderstorm with Lightning/Hail	New	Fire Chief	City Capital Improvement Budget; FEMA HMA Grants	Medium-Term	Structure and Infrastructure Projects	New	4	High
Johnston 9	Install radio repeater to communicate with all warning sirens and newly acquired monitoring system to ensure consistent communication with remote sirens that do not have good line of site transmission back to Public Works	Tornado, Thunderstorm with Lightning/Hail	New	Fire Chief	City Capital Improvement Budget; FEMA HMA Grants	Medium-Term	Structure and Infrastructure Projects	New	2, 4	High
Johnston 10	With the support of Polk County Emergency Management, develop and maintain consistent communication with the U.S. Army Corps of Engineers regarding the current condition of Saylorville Dam and any actions taken to reduce deficiencies and risks associated with the structure.	Dam Failure	Existing	Fire Chief	City General Fund; FEMA HMA Grants	Medium-Term	Structure and Infrastructure Projects	New	4	Medium

2024 Mitigation Action Plan										
Action ID	Mitigation Project / Activity Description	Hazards Addressed	Impacts Existing or New Structures	Responsible Agency or Entity	Potential Funding Sources	Expected Time Frame for Completion	Project Type	Action Status (New or Continuing)	Goal #	Priority (H/M/L)
Johnston 11	Conduct a public education and outreach campaign to increase awareness of the risks of dam failure within the inundation zone of Saylorville Dam.	Dam Failure	Existing	Fire Chief	City General Fund; FEMA HMA Grants	Medium-Term	Education and Outreach	New	4	Medium
Mitchellville 1	Backup power generator for police/fire station	Animal/plant/crop disease, climate change, cyberattack, dam failure, drought, earthquake, expansive soils, extreme temperatures, flash flooding, grass or wildland fire, hazardous materials incident, levee failure, river flooding, sinkholes/ landslides, structural fire, thunderstorm with lightning and hail, tornado, transportation incident, windstorm, winter storm	Existing	Police, Fire	General Operating Budget; FEMA HMA Grants	Medium-Term	Structure and Infrastructure Projects	Continuing	4	High
Mitchellville 2	Reinforce police/fire station roof	Windstorms	Existing	Police, Fire	General Operating Budget; FEMA HMA Grants	Medium-Term	Structure and Infrastructure Projects	Continuing	4	High
Mitchellville 3	Re-wiring the electrical system for police/fire station	Windstorms	Existing	Police, Fire	General Operating Budget; FEMA HMA Grants	Medium-Term	Structure and Infrastructure Projects	Continuing	4	Low
Mitchellville 4	New siren on east edge of town	Windstorms	New	Police, Fire	Capital Improvement Funds; FEMA HMA Grants	Medium-Term	Structure and Infrastructure Projects	Continuing	4	High

2024 Mitigation Action Plan										
Action ID	**Mitigation Project / Activity Description**	**Hazards Addressed**	**Impacts Existing or New Structures**	**Responsible Agency or Entity**	**Potential Funding Sources**	**Expected Time Frame for Completion**	**Project Type**	**Action Status (New or Continuing)**	**Goal #**	**Priority (H/M/L)**
Mitchellville 5	Continue to comply with the NFIP by enforcing floodplain management ordinance, including regulating/ monitoring new construction and substantial improvements in the SFHA; and participating in floodplain identification and mapping.	River Flooding	Both	Police, Fire	General Operating Budget	Long-Term	Local Plans and Regulations	Continuing	2, 4	Medium
Mitchellville 6	Invest in response capabilities, including construction of a new public safety facility, replacing aging ambulances and police cars, updating City EOP, converting fire service from paid on-call to a mixed department, and adding staff.	Animal/plant/crop disease, climate change, cyberattack, dam failure, drought, earthquake, expansive soils, extreme temperatures, flash flooding, grass or wildland fire, hazardous materials incident, levee failure, river flooding, sinkholes/ landslides, structural fire, thunderstorm with lightning and hail, tornado, transportation incident, windstorm, winter storm	Both	Police, Fire	Capital Improvement Funds, LOSST Funds; Bond Issuance	Long-Term	Structure and Infrastructure Projects	New	2	Low
Mitchellville 7	City-Wide Storm Shelter	Tornado	New	Police, Fire	Capital Improvement Funds; FEMA HMA Grants	Long-Term	Structure and Infrastructure Projects	New	4	High
Pleasant Hill 1	Generator for lift station at Southeast 60th Street	Animal/plant/crop disease, climate change, cyberattack, dam failure, drought, earthquake, expansive soils, extreme temperatures, flash flooding, grass or wildland fire, hazardous materials incident, levee failure, river flooding, sinkholes/ landslides, structural fire,	Existing	Community Development	Capital Improvement Fund; Sewer Fund; FEMA HMA Grants	Medium-Term	Structure and Infrastructure Projects	Continuing	4	Medium

2024 Mitigation Action Plan										
Action ID	**Mitigation Project / Activity Description**	**Hazards Addressed**	**Impacts Existing or New Structures**	**Responsible Agency or Entity**	**Potential Funding Sources**	**Expected Time Frame for Completion**	**Project Type**	**Action Status (New or Continuing)**	**Goal #**	**Priority (H/M/L)**
		thunderstorm with lightning and hail, tornado, transportation incident, windstorm, winter storm								
Pleasant Hill 2	Flood mitigation planning elevation of southeast connector so water passes underneath – current road is in flood zone	River Flooding	Existing and New	Community Development	Capital Improvement Fund; FEMA HMA Grants	Medium-Term	Structure and Infrastructure Projects	Continuing	4	Medium
Pleasant Hill 3	Creation of storm water utility (with taxing and bonding authority); Explore increase to utilities fees to complete storm water utilities.	Flash Flooding	N/A	Community Development	Stormwater Utility Fees	Long-Term	Local Plans and Regulations	Continuing	2	Medium
Pleasant Hill 4	Relocation of Public Works and Parks facilities (including gas pumps for city vehicles) which are in flood zones	River Flooding	Existing	Community Development	Capital Improvement Fund; TIF; FEMA HMA Grants	Medium-Term	Structure and Infrastructure Projects	Continuing	4	Medium
Pleasant Hill 5	Safe room incorporation into new city facilities / construction	Windstorm, Tornado	New	Community Development	Capital Improvement Fund; FEMA HMA Grants	Medium-Term	Structure and Infrastructure Projects	Continuing	4	High
Pleasant Hill 6	Regional detention facilities throughout the community	Flash Flooding	New	Community Development	General Obligation Fund; Stormwater Utility Fees; Capital Improvement	Medium-Term	Structure and Infrastructure Projects	Continuing	4	Medium

2024 Mitigation Action Plan										
Action ID	**Mitigation Project / Activity Description**	**Hazards Addressed**	**Impacts Existing or New Structures**	**Responsible Agency or Entity**	**Potential Funding Sources**	**Expected Time Frame for Completion**	**Project Type**	**Action Status (New or Continuing)**	**Goal #**	**Priority (H/M/L)**
					Fund; FEMA HMA Grants					
Pleasant Hill 7	Enhance combined development of Des Moines Area Regional GIS Partnership	Animal/plant/crop disease, climate change, cyberattack, dam failure, drought, earthquake, expansive soils, extreme temperatures, flash flooding, grass or wildland fire, hazardous materials incident, levee failure, river flooding, sinkholes/ landslides, structural fire, thunderstorm with lightning and hail, tornado, transportation incident, windstorm, winter storm	N/A	Community Development	General Obligation Fund	Medium-Term	Local Plans and Regulations	Continuing	3	Low
Pleasant Hill 8	Construction of new culvert at Little Four Mile Creek Drive 4400 block	Flash Flooding, Flooding	New	Community Development	Capital Improvement Fund; Stormwater Utility Fees	Medium-Term	Structure and Infrastructure Projects	Continuing	4	Medium
Pleasant Hill 9	Pursue remedial flood mitigation actions associated with the South East Des Moines (SEDM) Levee, US 65	River Flooding	Existing	Community Development	Capital Improvement Fund; FEMA HMA Grants	Medium-Term	Structure and Infrastructure Projects	Continuing	4	High
Pleasant Hill 10	Continue to comply with the NFIP by enforcing floodplain management ordinance, including regulating/ monitoring new construction and substantial improvements in the SFHA;	River Flooding	Existing and New	Community Development	General Obligation Fund	Long-Term	Local Plans and Regulations	Continuing	2, 4	Medium

2024 Mitigation Action Plan										
Action ID	**Mitigation Project / Activity Description**	**Hazards Addressed**	**Impacts Existing or New Structures**	**Responsible Agency or Entity**	**Potential Funding Sources**	**Expected Time Frame for Completion**	**Project Type**	**Action Status (New or Continuing)**	**Goal #**	**Priority (H/M/L)**
	and participating in floodplain identification and mapping.									
Pleasant Hill 11	Flood way buyout program	River Flooding	New	Community Development	General Obligation Fund; Stormwater Utility Fees; FEMA HMA Grants	Long-Term	Structure and Infrastructure Projects	Continuing	4	High
Pleasant Hill 12	Construction of Storm Water Detention Basins, Buffer Strips, and Channel Improvements to Fourmile Creek though the Fourmile Creek Watershed Authority	River Flooding, Flash Flooding	Both	Community Development	Capital Improvement Fund; Stormwater Utility Fees; FEMA HMA Grants	Long-Term	Structure and Infrastructure Projects	Continuing	3, 4	Medium
Pleasant Hill 13	Construction of Storm Water Detention Basins, buffer Strips, and Channel Improvements to Spring Creek watersheds though the Watershed Authority	River Flooding, Flash Flooding	Both	Community Development	Capital Improvement Fund; Stormwater Utility Fees; FEMA HMA Grants	Long-Term	Structure and Infrastructure Projects	Continuing	3, 4	Medium
Pleasant Hill 14	Management of Stream Buffers - along creek beds / river beds	River Flooding	Existing	Community Development	General Obligation Fund; Stormwater Utility Fees	Long-Term	Structure and Infrastructure Projects	Continuing	4	Medium

2024 Mitigation Action Plan										
Action ID	**Mitigation Project / Activity Description**	**Hazards Addressed**	**Impacts Existing or New Structures**	**Responsible Agency or Entity**	**Potential Funding Sources**	**Expected Time Frame for Completion**	**Project Type**	**Action Status (New or Continuing)**	**Goal #**	**Priority (H/M/L)**
Pleasant Hill 15	Modify existing Public Works and Parks Facilities to become more flood resistant and accessible during high water events	River Flooding, Flash Flooding	Both	Community Development	General Obligation Fund; FEMA HMA Grants	Long-Term	Structure and Infrastructure Projects	New	4	Medium
Pleasant Hill 16	Create a redundant communication network including construction of communication tower, fiber ring, multiple service providers and other available technology advances for traffic signals and municipal buildings to ensure emergency and critical communication is always accessible. Consider satellite phones for emergency operations.	Animal/plant/crop disease, climate change, cyberattack, dam failure, drought, earthquake, expansive soils, extreme temperatures, flash flooding, grass or wildland fire, hazardous materials incident, levee failure, river flooding, sinkholes/ landslides, structural fire, thunderstorm with lightning and hail, tornado, transportation incident, windstorm, winter storm	Both	Community Development	General Obligation Fund; Federal comms and preparedness grants, EMPG	Long-Term	Structure and Infrastructure Projects	New	2	Medium
Pleasant Hill 17	Add solar, electric vehicle, geothermal and other energy efficient programs where appropriate to City buildings to add redundancy. Provide grounding and surge protectors where appropriate.	Animal/plant/crop disease, climate change, cyberattack, dam failure, drought, earthquake, expansive soils, extreme temperatures, flash flooding, grass or wildland fire, hazardous materials incident, levee failure, river flooding, sinkholes/ landslides, structural fire, thunderstorm with lightning and hail, tornado, transportation incident, windstorm, winter storm	Both	Community Development	General Obligation Fund	Long-Term	Structure and Infrastructure Projects	New	4	Medium

2024 Mitigation Action Plan										
Action ID	Mitigation Project / Activity Description	Hazards Addressed	Impacts Existing or New Structures	Responsible Agency or Entity	Potential Funding Sources	Expected Time Frame for Completion	Project Type	Action Status (New or Continuing)	Goal #	Priority (H/M/L)
Pleasant Hill 18	Equip public safety professionals with gear appropriate for hazard response and rescue efforts such as water rescue suits, PFDs, thermal cameras, and other necessary equipment.	Animal/plant/crop disease, climate change, cyberattack, dam failure, drought, earthquake, expansive soils, extreme temperatures, flash flooding, grass or wildland fire, hazardous materials incident, levee failure, river flooding, sinkholes/ landslides, structural fire, thunderstorm with lightning and hail, tornado, transportation incident, windstorm, winter storm	N/A	Community Development	General Obligation Fund; Equipment Replacement Fund; Federal preparedness grants, EMPG	Medium-Term	Local Plans and Regulations	New	2	Medium
Pleasant Hill 19	Create a cyber-security plan or conduct vulnerability analysis and implement recommendations to ensure safe data protection including software upgrades, policy adoption, data backup, education and training, and other relevant steps to maintain control of City network.	Cyberattack	N/A	Community Development	General Obligation Fund; Federal cyber security grants, EMPG	Medium-Term	Local Plans and Regulations	New	2	Low
Pleasant Hill 20	Develop a robust pedestrian network to accommodate and separate users, especially in critical areas such as the bridge over Fourmile Creek (add sidewalk/trail), grade separated crossings where appropriate, advanced flashers for at grade crossings	Infrastructure Failure	New	Community Development	Capital Improvement Fund	Medium-Term	Structure and Infrastructure Projects	New	4	Medium
Polk City 1	Safe Room for: police department/fire department/ community center/city hall/ visitors at area lakes	Tornado	Existing	Fire, Planning	City General Operating Budget; FEMA HMA Grants	Medium-Term	Structure and Infrastructure Projects	Continuing	4	High

2024 Mitigation Action Plan										
Action ID	Mitigation Project / Activity Description	Hazards Addressed	Impacts Existing or New Structures	Responsible Agency or Entity	Potential Funding Sources	Expected Time Frame for Completion	Project Type	Action Status (New or Continuing)	Goal #	Priority (H/M/L)
Polk City 2	Safe room for sports complex	Tornado	New	Fire, Planning	City General Operating Budget; FEMA HMA Grants	Medium-Term	Structure and Infrastructure Projects	Continuing	4	High
Polk City 3	Advocate for structural enhancements to Mile Long Bridge to bring to current DOT standards	River Flooding	Existing	Fire, Planning	City General Operating Budget; Federal Infrastructure Grants	Medium-Term	Structure and Infrastructure Projects	Continuing	4	High
Polk City 4	Storm sirens at Hugg Drive and Westside Drive	Tornado	New	Fire, Planning	City General Operating Budget; FEMA HMA Grants	Medium-Term	Structure and Infrastructure Projects	Continuing	4	High
Polk City 5	Lining of public sewers to mitigate infiltration of the main pump.	Flash Flooding	Existing	Fire, Planning	City General Operating Budget; FEMA HMA Grants	Medium-Term	Structure and Infrastructure Projects	Continuing	4	Medium
Polk City 6	Culvert at N 3rd -Bedshed Drive to mitigate water running over the road flooding buildings	Flash Flooding	Existing	Fire, Planning	City General Operating Budget; FEMA HMA Grants	Medium-Term	Structure and Infrastructure Projects	Continuing	4	Medium
Polk City 7	Join the National Flood Insurance Program	River Flooding	Both	Fire, Planning	City General Operating Budget;	Long-Term	Local Plans and Regulations	Continuing	2	High

2024 Mitigation Action Plan										
Action ID	Mitigation Project / Activity Description	Hazards Addressed	Impacts Existing or New Structures	Responsible Agency or Entity	Potential Funding Sources	Expected Time Frame for Completion	Project Type	Action Status (New or Continuing)	Goal #	Priority (H/M/L)
Polk City 8	Conduct tabletop exercise with Emergency Management and U.S. Army Corps of Engineers to assess readiness for dam failure and identify gaps in preparedness (Big Creek Diversion Dam).	Dam Failure	Existing	All HMPC representatives from participating jurisdictions	FEMA HMA or HHPD Grants	Long-Term	Structure and Infrastructure Projects	New	4	High
Runnells 1	Backup power generator for community center at 108 Brown Street	Tornado	New	Fire Department	G-L Community Center; FEMA HMA Grants	Short-Term	Structure and Infrastructure Projects	Continuing	4	Medium
Runnells 2	Document electronic backup for city critical documents	Tornado	N/A	Fire Department	G-L City Hall	Medium-Term	Local Plans and Regulations	Continuing	2	Medium
Runnells 3	Development of new lagoon at sewer station to mitigate overflow in high rains	Flash Flooding	New	Fire Department	Sewer Proprietary; FEMA HMA Grants	Short-Term	Structure and Infrastructure Projects	Continuing	4	Medium
Runnells 4	Continue to comply with the NFIP by enforcing floodplain management ordinance, including regulating/ monitoring new construction and substantial improvements in the SFHA; and participating in floodplain identification and mapping.	River Flooding	Existing and New	Fire Department	G-L Ground Maintenance	Long-Term	Local Plans and Regulations	Continuing	2	High
Runnells 5	Conduct a public education and outreach campaign to increase awareness of the risks of dam failure within the inundation zones of Red Rock Dam - Avon Station Remedial	Dam Failure	Existing	Fire Department	FEMA HMA Grants	Medium-Term	Education and Outreach	New	4	Medium

2024 Mitigation Action Plan										
Action ID	**Mitigation Project / Activity Description**	**Hazards Addressed**	**Impacts Existing or New Structures**	**Responsible Agency or Entity**	**Potential Funding Sources**	**Expected Time Frame for Completion**	**Project Type**	**Action Status (New or Continuing)**	**Goal #**	**Priority (H/M/L)**
	Works, Red Rock Dam - Carlisle Remedial Dam, and Saylorville Dam,									
Urbandale 1	Hickman Rd interchange (in conjunction with the DOT I-80/35 widening project)	Infrastructure Failure	Both	DOT, Engineering	CIP	Medium (2028)	Infrastructure	New	High	High
Urbandale 2	Meredith Drive widening/extension, 156th 170th – 184th St.	Infrastructure Failure	Both	Engineering	CIP	Medium (2028)	Infrastructure	New	Low	Low
Urbandale 3	NW 54th St widening	Infrastructure Failure	Both	Urbandale, Johnston	CIP	Short (2026)	Infrastructure	New	Low	Low
Urbandale 4	170th St. (Alices Rd) widening north of Meredith	Infrastructure Failure	New	Engineering	CIP	Medium (2028)	Infrastructure	New	Low	Low
Urbandale 5	Merle Hay Reinvestment District Stormwater Improvements Project	Flash Flooding	Existing	Engineering	CIP	Short (2025)	Infrastructure	New	Medium	Medium

2024 Mitigation Action Plan										
Action ID	Mitigation Project / Activity Description	Hazards Addressed	Impacts Existing or New Structures	Responsible Agency or Entity	Potential Funding Sources	Expected Time Frame for Completion	Project Type	Action Status (New or Continuing)	Goal #	Priority (H/M/L)
Urbandale 6	Oliver Smith Drive Storm Sewer Improvements	Flash Flooding	Existing	Engineering	CIP	Medium (2028)	Infrastructure	New	Medium	Medium
Urbandale 7	Roseland Drive Storm Sewer Improvements	Flash Flooding	Existing	Engineering	CIP	Medium (2028)	Infrastructure	New	Medium	Medium
Urbandale 8	Storm Sewer Extension to the Merle Hay Reinvestment District	Flash Flooding	Existing	Engineering	CIP	Medium (2028)	Infrastructure	New	Medium	Medium
Urbandale 9	66th Street Storm Sewer Improvements	Flash Flooding	Existing	Engineering	CIP	Medium (2028)	Infrastructure	New	Medium	Medium
Urbandale 10	Expansion of the Waaterford Rd. Public Work site	Flash Flooding	Both	Public Works	CIP	Medium (2028)	Structure	New	Low	Low
Urbandale 11	Replace Fire Station 41	Structure Fire	Both	Fire	CIP	Medium (2028)	Structure	New	High	High

2024 Mitigation Action Plan										
Action ID	Mitigation Project / Activity Description	Hazards Addressed	Impacts Existing or New Structures	Responsible Agency or Entity	Potential Funding Sources	Expected Time Frame for Completion	Project Type	Action Status (New or Continuing)	Goal #	Priority (H/M/L)
Urbandale 12	Hickman Rd interchange (in conjunction with the DOT I-80/35 widening project)	Infrastructure Failure	Both	DOT, Engineering	CIP	Medium (2028)	Infrastructure	New	High	High
Urbandale 13	Address physical and structural deficiencies to reduce risk associated with the Parkview Dam and maintain its satisfactory condition.	Dam Failure	Existing	Public Works	CIP	Medium (2028)	Infrastructure	New	4	High
Urbandale 14	Conduct a public education and outreach campaign to increase awareness of the risks of dam failure within the inundation zones of Clive Lake Dam, Parkview Lake Dam, and Saylorville Dam.	Dam Failure	Existing	Public Works	CIP	Medium (2028)	Education and Outreach	New	4	High
West Des Moines 1	Elevation of I-35 Bridge over Raccoon River and Highway 28 Bridge over Raccoon River to mitigate washout	River Flooding	Existing	Fire and EMS	City General Operating Budget; Capital Improvement Funds; Stormwater Fees; FEMA HMA Grants	Long-Term	Structure and Infrastructure Projects	Continuing	4	High
West Des Moines 2	Pursue remedial flood mitigation actions associated with the Southeast Des Moines (SEDM) Levee, US 65	River Flooding	Existing	Fire and EMS	City General Operating Budget; Capital Improvement Funds; Stormwater Fees; FEMA HMA Grants	Long-Term	Structure and Infrastructure Projects	Continuing	4	Medium

2024 Mitigation Action Plan										
Action ID	Mitigation Project / Activity Description	Hazards Addressed	Impacts Existing or New Structures	Responsible Agency or Entity	Potential Funding Sources	Expected Time Frame for Completion	Project Type	Action Status (New or Continuing)	Goal #	Priority (H/M/L)
West Des Moines 3	Lining of public sewers in the Valley Junction Area to mitigate infiltration at the Main Pump-2 Phases	Flash Flooding	Existing	Fire and EMS	City General Operating Budget; Capital Improvement Funds; Stormwater Fees; FEMA HMA Grants	Long-Term	Structure and Infrastructure Projects	Continuing	4	Medium
West Des Moines 4	Lining of public sewers in the Fairmeadows Creek Area to mitigate infiltration of the main pump	Flash Flooding	Existing	Fire and EMS	City General Operating Budget; Capital Improvement Funds; Stormwater Fees; FEMA HMA Grants	Long-Term	Structure and Infrastructure Projects	Continuing	4	Medium
West Des Moines 5	Map and buffer Tier II facilities within City and adjacent to City perimeter. Develop emergency response and subsequent evacuation routes for HAZMAT incidents based on these mappings.	HAZMAT Incident, Transportation Incident	Existing	Fire and EMS	City General Operating Budget; Capital Improvement Funds; Stormwater Fees; FEMA HMA Grants	Medium-Term	Local Plans and Regulations	Continuing	2, 3	High
West Des Moines 6	Implement recommended storm water improvements from the Westown-PCP drainage study.	Flash Flooding	Existing and New	Fire and EMS	City General Operating Budget; Capital Improvement Funds; Stormwater Fees; FEMA HMA Grants	Long-Term	Structure and Infrastructure Projects	Continuing	4	Medium

2024 Mitigation Action Plan										
Action ID	Mitigation Project / Activity Description	Hazards Addressed	Impacts Existing or New Structures	Responsible Agency or Entity	Potential Funding Sources	Expected Time Frame for Completion	Project Type	Action Status (New or Continuing)	Goal #	Priority (H/M/L)
West Des Moines 7	Installation of ice protection structures at regional radio communications infrastructure sites.	Winter storms, Windstorms	New	Fire and EMS	City General Operating Budget; Capital Improvement Funds; Economic Developent Funds; FEMA Preparedness Grants	Medium-Term	Structure and Infrastructure Projects	Continuing	4	Medium
West Des Moines 8	Develop evacuation routes for hazard incidents, flooding incidents, and serve weather incidents.	HAZMAT Incident, Transportation Incident	Existing	Fire and EMS	City General Operating Budget; Capital Improvement Funds; Economic Developent Funds; FEMA preparedness Grants	Medium-Term	Local Plans and Regulations	Continuing	1, 2	High
West Des Moines 9	Map Tier II facilities within City and adjacent to City perimeter.	HAZMAT Incident, Transportation Incident	Existing	Fire and EMS	City General Operating Budget; Capital Improvement Funds; Economic Developent Funds; FEMA preparedness Grants	Medium-Term	Local Plans and Regulations	Continuing	2, 3	Medium
West Des Moines 10	In conjunction with redevelopment, identify and implement storm water drainage improvement recommendations within the Blue Creek drainage basin.	Flash Flooding	Both	Fire and EMS	City General Operating Budget; Capital Improvement Funds FEMA HMA Grants	Long-Term	Local Plans and Regulations, Structure and Infrastructure Projects	Continuing	4	Medium

2024 Mitigation Action Plan										
Action ID	Mitigation Project / Activity Description	Hazards Addressed	Impacts Existing or New Structures	Responsible Agency or Entity	Potential Funding Sources	Expected Time Frame for Completion	Project Type	Action Status (New or Continuing)	Goal #	Priority (H/M/L)
West Des Moines 11	Enhance current floodplain management efforts by updating the Floodplain Management Ordinance, which includes new Flood Insurance Rate Maps, associated ordinance language approved by IDNR/FEMA, and increased requirements for City facilities including public services, emergency services, and similar structures that are critical to maintaining City functions in an emergency to be elevated a minimum of one (1) foot above the 500-year flood.	Flash Flooding	Both	Fire and EMS	City General Operating Budget; Capital Improvement Funds; Stormwater Fees; FEMA HMA Grants	Long-Term	Local Plans and Regulations	Continuing	1, 2, 4	Medium
West Des Moines 12	SE Basins Stormwater Improvements (Valley Junction Area) approximate boundary: 19th St. & Woodland Ave. to Grand Ave. & Railroad Avenue to Lincoln St. & HWY 28 to Hwy 28 & Prospect Ave.	Flash Flooding, Transportation Incident	Both	Fire and EMS	City General Operating Budget; Capital Improvement Funds; Stormwater fees; FEMA HMA Grants	Long-Term	Structure and Infrastructure Projects	Continuing	4	Medium
West Des Moines 13	NE Basins Stormwater Improvements (Valley Junction Area) approximate boundary: Hwy. 28 & N. of Ashworth Rd. to Hoak Dr. & IA Interstate RR to Office Park Road & 15th St. to Ashworth Rd. & 11th St. to Ashworth Rd. & 9th St. to Grand Ave. & 9th St. to Grand Ave. & 8th St. to 5th St. & Prospect Ave. to 5th St. & Vine St. to Hwy 28 & Vine St. to Hwy 28 & Lincoln St. to Walnut Creek Levee (Des Moines) to Hwy. 28 & N. of Ashworth Rd.	Flash Flooding, Transportation Incident	Both	Fire and EMS	City General Operating Budget; Capital Improvement Funds; Stormwater fees; FEMA HMA Grants	Long-Term	Structure and Infrastructure Projects	Continuing	4	Medium

2024 Mitigation Action Plan										
Action ID	Mitigation Project / Activity Description	Hazards Addressed	Impacts Existing or New Structures	Responsible Agency or Entity	Potential Funding Sources	Expected Time Frame for Completion	Project Type	Action Status (New or Continuing)	Goal #	Priority (H/M/L)
West Des Moines 14	Raccoon River - Bank Stabilization	River Flooding, Transportation Incident	Existing	Fire and EMS	City General Operating Budget; Capital Improvement Funds; Stormwater fees; FEMA HMA Grants	Long-Term	Structure and Infrastructure Projects	Continuing	4	Medium
West Des Moines 15	Grand Avenue Stormwater Pump Station Near Raccoon River Dr.	River Flooding, Transportation Incident	New	Fire and EMS	City General Operating Budge;, Capital Improvement Funds; Stormwater Fees; FEMA HMA Grants	Medium-Term	Structure and Infrastructure Projects	Continuing	4	Medium
West Des Moines 16	Blue Creek Basins Stormwater Improvements (5 Basins)	Flash Flooding	Both	Fire and EMS	City General Operating Budget; Capital Improvement Funds; Stormwater fees; FEMA HMA Grants	Medium-Term	Structure and Infrastructure Projects	Continuing	4	Medium
West Des Moines 17	Iowa Interstate Railroad Bridge near Raccoon River Park Entrance and Raccoon River Park Soccer Complex Culvert	Flash Flooding, Transportation Incident	Existing	Fire and EMS	City General Operating Budget; Capital Improvement Funds; Stormwater fees; FEMA HMA Grants	Medium-Term	Structure and Infrastructure Projects	Continuing	4	Medium

2024 Mitigation Action Plan										
Action ID	Mitigation Project / Activity Description	Hazards Addressed	Impacts Existing or New Structures	Responsible Agency or Entity	Potential Funding Sources	Expected Time Frame for Completion	Project Type	Action Status (New or Continuing)	Goal #	Priority (H/M/L)
West Des Moines 18	Fairmeadows Creek - 27th & Vine Culvert	Flash Flooding	Existing	Fire and EMS	City General Operating Budget; Capital Improvement Funds; Stormwater fees; FEMA HMA Grants	Medium-Term	Structure and Infrastructure Projects	Continuing	4	Medium
West Des Moines 19	Walnut Creek Watershed Management Authority Misc. Projects	Flash Flooding	Existing	Fire and EMS	City General Operating Budget; Capital Improvement Funds; Stormwater fees; FEMA HMA Grants	Long-Term	Structure and Infrastructure Projects	Continuing	4	Medium
West Des Moines 20	62nd & Railroad Ave Sanitary Sewer Gate Structure Replacement	Infrastructure Failure	Existing	Fire and EMS	City General Operating Budget; Capital Improvement Funds; Stormwater fees; Economic Development Funds; FEMA HMA Grants	Medium-Term	Structure and Infrastructure Projects	Continuing	4	Medium
West Des Moines 21	8th Street Reconstruction - I-235 to Clegg Road	Transportation Incident	Existing	Fire and EMS	City General Operating Budget; Capital Improvement Funds; Stormwater fees; Economic Development	Medium-Term	Structure and Infrastructure Projects	Continuing	4	Medium

2024 Mitigation Action Plan										
Action ID	**Mitigation Project / Activity Description**	**Hazards Addressed**	**Impacts Existing or New Structures**	**Responsible Agency or Entity**	**Potential Funding Sources**	**Expected Time Frame for Completion**	**Project Type**	**Action Status (New or Continuing)**	**Goal #**	**Priority (H/M/L)**
					Funds; FEMA HMA Grants					
West Des Moines 22	S. 88th Street Railroad Crossing improvements- Near Raccoon River Drive	Transportation Incident	Existing	Fire and EMS	City General Operating Budget; Capital Improvement Funds; Economic Development Funds; FEMA HMA Grants	Medium-Term	Structure and Infrastructure Projects	Continuing	4	Medium
West Des Moines 23	Evaluate and consider participation or adoption of programs, standards, and policies to achieve compliance by alternate means and methods or phased improvements to bring older developed areas within the jurisdiction into compliance with building, fire, and flood hazard standards.	Animal/plant/crop disease, climate change, cyberattack, dam failure, drought, earthquake, expansive soils, extreme temperatures, flash flooding, grass or wildland fire, hazardous materials incident, levee failure, river flooding, sinkholes/ landslides, structural fire, thunderstorm with lightning and hail, tornado, transportation incident, windstorm, winter storm	Both	Fire and EMS	City General Operating Budget; Capital Improvement Funds; Economic Development Funds; FEMA HMA Grants	Long-Term	Local Plans and Regulations	New	2	Medium
West Des Moines 24	Address physical and structural deficiencies to reduce risks associated with West Lake Office Park Dam and Glen Oaks Country Club Dam as well as maintaining the satisfactory condition of these dams.	Dam Failure	Existing	Fire and EMS	City General Operating Budget; Capital Improvement Funds; Stormwater fees; Economic Development	Long-Term	Structure and Infrastructure Projects	New	4	Medium

2024 Mitigation Action Plan										
Action ID	**Mitigation Project / Activity Description**	**Hazards Addressed**	**Impacts Existing or New Structures**	**Responsible Agency or Entity**	**Potential Funding Sources**	**Expected Time Frame for Completion**	**Project Type**	**Action Status (New or Continuing)**	**Goal #**	**Priority (H/M/L)**
					Funds; FEMA HMA Grants					
West Des Moines 25	Conduct a public education and outreach campaign to increase awareness of the risks of dam failure within the inundation zones of Clive Lake Dam, Glen Oaks Country Club Dam, Saylorville Dam, and West Lake Office Park Dam.	Dam Failure	Existing	Fire and EMS	City General Operating Budget; Capital Improvement Funds; Stormwater fees; Economic Development Funds; FEMA HMA Grants	Long-Term	Education and Outreach	New	4	Medium
Windsor Heights 1	Install residential check valves at Washington Avenue and 70th Street	Flash Flooding	Existing	City Administrator's Office	General Operating Budget; FEMA HMA Grants	Medium-Term	Structure and Infrastructure Projects	Continuing	4	Medium
Windsor Heights 2	Replace storm sewer intakes	Flash Flooding	Existing	City Administrator's Office	Stormwater Fund	Long-Term	Structure and Infrastructure Projects	Continuing	4	Medium
Windsor Heights 3	Identify potential future shelter sites	Windstorms	Existing & New	City Administrator's Office	General Operating Budget; FEMA Preparedness Grants	Short-term	Local Plans and Regulations	Continuing	4	High

2024 Mitigation Action Plan										
Action ID	Mitigation Project / Activity Description	Hazards Addressed	Impacts Existing or New Structures	Responsible Agency or Entity	Potential Funding Sources	Expected Time Frame for Completion	Project Type	Action Status (New or Continuing)	Goal #	Priority (H/M/L)
Windsor Heights 4	Continue to comply with the NFIP by enforcing floodplain management ordinance, including regulating/ monitoring new construction and substantial improvements in the SFHA; and participating in floodplain identification and mapping.	River Flooding	Existing & New	City Administrator's Office	General Operating Budget	Long-term	Local Plans and Regulations	Continuing	1	High
Windsor Heights 5	Walnut Creek bank stabilization	River Flooding	Existing	City Administrator's Office	Stormwater Funds; FEMA HMA Grants	Long-term	Structure and Infrastructure Projects	Continuing	4	Medium
Windsor Heights 6	Construct a non-accredited levee along the east bank of Walnut Creek between southwest of Wal-Mart and I-235 or Construct an accredited levee along the east bank of Walnut Creek between east of Wal-Mart / west of the Colby Park neighborhood and I-235. or Construct an accredited levee along the east bank of Walnut Creek between the Colby Park neighborhood and I-235.	River Flooding	New	City Administrator's Office	FEMA HMA Grants	Long-term	Structure and Infrastructure Projects	New	4	High
Windsor Heights 7	Channel Modification. Construct channel improvements from I-235 to 63rd Street.	Flash Flooding; River Flooding	New	City Administrator's Office	FEMA HMA Grants	Long-Term	Structure and Infrastructure Projects	New	4	Medium
Windsor Heights 8	Construct one or more flood risk reduction dams or detention cells	Flash Flooding; River Flooding	New	City Administrator's Office	General Operating Budget; FEMA HMA Grants	Long-Term	Structure and Infrastructure Projects	New	4	Medium

2024 Mitigation Action Plan										
Action ID	Mitigation Project / Activity Description	Hazards Addressed	Impacts Existing or New Structures	Responsible Agency or Entity	Potential Funding Sources	Expected Time Frame for Completion	Project Type	Action Status (New or Continuing)	Goal #	Priority (H/M/L)
Windsor Heights 9	Upstream dam in upper Walnut Creek Watershed	River Flooding	New	City Administrator's Office	FEMA HMA Grants	Long-Term	Structure and Infrastructure Projects	New	4	Medium
Windsor Heights 10	Install a concrete barrier along selected properties beside North Walnut Creek.	River Flooding	New	City Administrator's Office	FEMA HMA Grants	Long-Term	Structure and Infrastructure Projects	New	4	Medium
Windsor Heights 11	Acquisition of shared resource emergency vechichles	Animal/plant/crop disease, climate change, cyberattack, dam failure, drought, earthquake, expansive soils, extreme temperatures, flash flooding, grass or wildland fire, hazardous materials incident, levee failure, river flooding, sinkholes/ landslides, structural fire, thunderstorm with lightning and hail, tornado, transportation incident, windstorm, winter storm	N/A	City Administrator's Office	General Operating Budget; FEMA HMA Grants	Medium-Term	Local Plans and Regulations	New	2	Medium
Windsor Heights 12	Relocate Public Works and Community Center out of flood plain.	River Flooding	Existing	City Administrator's Office	FEMA HMA Grants	Long-Term	Structure and Infrastructure Projects	New	4	High
Windsor Heights 13	Conduct a public education and outreach campaign to increase awareness of the risks of dam failure within the inundation zone of Clive Lake Dam.	Dam Failure	Existing	City Administrator's Office	General Operating Budget; FEMA HMA Grants	Medium-Term	Education and Outreach	New	4	Medium

2024 Mitigation Action Plan										
Action ID	Mitigation Project / Activity Description	Hazards Addressed	Impacts Existing or New Structures	Responsible Agency or Entity	Potential Funding Sources	Expected Time Frame for Completion	Project Type	Action Status (New or Continuing)	Goal #	Priority (H/M/L)
Delaware Township 1	Standby Generator Installation	Animal/plant/crop disease, climate change, cyberattack, dam failure, drought, earthquake, expansive soils, extreme temperatures, flash flooding, grass or wildland fire, hazardous materials incident, levee failure, river flooding, sinkholes/ landslides, structural fire, thunderstorm with lightning and hail, tornado, transportation incident, windstorm, winter storm	New	Fire	HMGP 5%; Community donations	Long-Term	Structure and Infrastructure Projects	Continuing	2, 4	High
Delaware Township 2	Replace Fire Engine	Structural Fire	New	Fire	Preparedness Grants; Community donations	Medium-Term	Local Plans and Regulations	New	2	Medium
Des Moines Water Works 1	Evaluate and repair flood gates located at the Fleur Drive Water Treatment Plant.	River Flooding	Existing	DMWW	DMWW Capital Improvement Funds; HMA Grants	Medium-Term	Structure and Infrastructure Projects	Continuing	2, 4	High
Des Moines Water Works 2	Evaluation of ring levee protecting Fleur Drive Water Treatment Plant.	River Flooding	Existing	DMWW	DMWW Capital Improvement Funds; HMA Grants	Medium-Term	Local Plans and Regulations	Continuing	2, 4	High
Des Moines Water Works 3	Add flood protection to the East Low Lift and East High Lift facilities at the Fleur Drive Water Treatment Plant.	River Flooding	Existing	DMWW	DMWW Capital Improvement Funds; HMA Grants	Medium-Term	Structure and Infrastructure Projects	New	4	Medium

2024 Mitigation Action Plan										
Action ID	**Mitigation Project / Activity Description**	**Hazards Addressed**	**Impacts Existing or New Structures**	**Responsible Agency or Entity**	**Potential Funding Sources**	**Expected Time Frame for Completion**	**Project Type**	**Action Status (New or Continuing)**	**Goal #**	**Priority (H/M/L)**
Des Moines Water Works 4	Evaluate and mitigate flood hazards at the Maffitt Water Treatment Plant, including but not limited to: wells, riprap, levees, pump station, and river intake.	River Flooding	Existing	DMWW	DMWW Capital Improvement Funds; HMA Grants	Medium-Term	Structure and Infrastructure Projects	New	4	Medium
Des Moines Water Works 5	Improve resiliency to cyanotoxins in source water at all three water treatment plants.	River Flooding	Existing	DMWW	DMWW Capital Improvement Funds; HMA Grants	Medium-Term	Structure and Infrastructure Projects	New	4	Medium
Ankeny Schools 1	Multi-purpose Safe Rooms District Wide	Tornado	Both	Ankeny Schools	Physical Plant & Equipment Levy; Secure an Advanced Vision for Education; School Bonds; General Operating Budget; FEMA HMA Grants	Medium-Term	Structure and Infrastructure Projects	Continuing	4	High
Ankeny Schools 2	Emergency HVAC Shut-Off	Hazardous Materials	Both	Ankeny Schools	Physical Plant & Equipment Levy; Secure an Advanced Vision for Education; School Bonds; General Operating Budget; FEMA HMA Grants	Medium-Term	Structure and Infrastructure Projects	Continuing	4	Medium

2024 Mitigation Action Plan										
Action ID	Mitigation Project / Activity Description	Hazards Addressed	Impacts Existing or New Structures	Responsible Agency or Entity	Potential Funding Sources	Expected Time Frame for Completion	Project Type	Action Status (New or Continuing)	Goal #	Priority (H/M/L)
Ankeny Schools 3	Safety Film/Glass	Intruder	New	Ankeny Schools	Physical Plant & Equipment Levy; Secure an Advanced Vision for Education; School Bonds; General Operating Budget; FEMA HMA Grants	Medium-Term	Structure and Infrastructure Projects	Continuing	4	High
Ankeny Schools 4	Back-up Facility Generators	Tornado	Existing	Ankeny Schools	Physical Plant & Equipment Levy; Secure an Advanced Vision for Education; School Bonds; General Operating Budget; FEMA HMA Grants	Medium-Term	Structure and Infrastructure Projects	Continuing	4	Medium
Ankeny Schools 5	Bi-Directional Amplifiers (BDA) capable of both P25 and Mototrbo to enhance interoperable communications between responders and school officials in an emergency	Animal/plant/crop disease, climate change, cyberattack, dam failure, drought, earthquake, expansive soils, extreme temperatures, flash flooding, grass or wildland fire, hazardous materials incident, levee failure, river flooding, sinkholes/ landslides, structural fire, thunderstorm with lightning and hail, tornado, transportation incident, windstorm, winter storm	Both	Ankeny Schools	Physical Plant & Equipment Levy; Secure an Advanced Vision for Education; School Bonds; General Operating Budget; FEMA Preparedness Grants	Medium-Term	Local Plans and Regulations	New	2	Medium

2024 Mitigation Action Plan										
Action ID	Mitigation Project / Activity Description	Hazards Addressed	Impacts Existing or New Structures	Responsible Agency or Entity	Potential Funding Sources	Expected Time Frame for Completion	Project Type	Action Status (New or Continuing)	Goal #	Priority (H/M/L)
Bondurant-Farrar Schools 1	Storm Safe Room at Anderson Elementary	Tornado	Existing	Bondurant-Farrar School District	Physical Plant & Equipment Levy; Secure an Advanced Vision for Education; FEMA HMA Grants	Medium-Term	Structure and Infrastructure Projects	Continuing	4	High
Des Moines Schools 1	DAS and repeaters- (Distributed antenna system) As Des Moines Public Schools becomes more energy efficient, cellular and radio communications are blocked within our buildings. In order to combat this, we need to add DAS antennas and repeaters. This improves communication capabilities for not only DMPS staff, but also all emergency responders.	Infrastructure Failure	Existing	Des Moines Schools	Capital expenses; FEMA preparedness Grants	Medium-Term	Structure and Infrastructure Projects	Continuing	2, 4	Medium
Des Moines Schools 2	Virtual, remote server farm service for disaster recovery due to flood, tornado, windstorm. Our servers are in a building that is in a flood plain. Our back-up system is downtown which also has the potential to flood. In order to recover from a disaster we need the ability to transfer all systems to a remote 3rd party.	Infrastructure Failure	Existing	Des Moines Schools	Capital expenses; FEMA preparedness Grants	Long-Term	Structure and Infrastructure Projects	Continuing	2, 4	Medium
Des Moines Schools 3	Backup Generation at all of our schools and administrative offices	Infrastructure Failure	Existing	Des Moines Schools	PPEL; FEMA HMA Grants	Medium-Term	Structure and Infrastructure Projects	Continuing	4	Medium

2024 Mitigation Action Plan										
Action ID	Mitigation Project / Activity Description	Hazards Addressed	Impacts Existing or New Structures	Responsible Agency or Entity	Potential Funding Sources	Expected Time Frame for Completion	Project Type	Action Status (New or Continuing)	Goal #	Priority (H/M/L)
Des Moines Schools 4	Construct new safe rooms at various elementary schools	Tornado	Existing	Des Moines Schools	Capital expenses; FEMA HMA Grants	Long-Term	Structure and Infrastructure Projects	Continuing	4	High
Johnston Schools 1	Sprinklers in facility at 6510 NW 62nd when repurposing the building	Fire	Existing	Johnston Schools	Capital Improvements Fund; FEMA HMA Grants	Medium-Term	Structure and Infrastructure Projects	Continuing	4	Medium
Johnston Schools 2	Replace and upgrade of emergency communication radio system	Animal/plant/crop disease, climate change, cyberattack, dam failure, drought, earthquake, expansive soils, extreme temperatures, flash flooding, grass or wildland fire, hazardous materials incident, levee failure, river flooding, sinkholes/ landslides, structural fire, thunderstorm with lightning and hail, tornado, transportation incident, windstorm, winter storm	Existing	Johnston Schools	Capital Improvements Fund; FEMA preparedness Grants	Medium-Term	Local Plans and Regulations	Continuing	2	Medium
North Polk Schools 1	Construct safe rooms at Central Elementary and North Polk Junior/Senior High School	Tornado	Existing	North Polk Schools	Physical Plant and Equipment Levy; Secure an Advanced Vision for Education; bond sales; FEMA HMA Grants	Medium-Term	Structure and Infrastructure Projects	Continuing	4	High

2024 Mitigation Action Plan										
Action ID	Mitigation Project / Activity Description	Hazards Addressed	Impacts Existing or New Structures	Responsible Agency or Entity	Potential Funding Sources	Expected Time Frame for Completion	Project Type	Action Status (New or Continuing)	Goal #	Priority (H/M/L)
North Polk Schools 2	Research, scope, and conduct structural and non-structural retrofits to reduce the vulnerability of school district facilities to all hazards.	Animal/plant/crop disease, climate change, cyberattack, dam failure, drought, earthquake, expansive soils, extreme temperatures, flash flooding, grass or wildland fire, hazardous materials incident, levee failure, river flooding, sinkholes/ landslides, structural fire, thunderstorm with lightning and hail, tornado, transportation incident, windstorm, winter storm	Existing	North Polk Schools	Physical Plant and Equipment Levy; Secure an Advanced Vision for Education; bond sales; FEMA HMA Grants	Medium-Term	Structure and Infrastructure Projects	New	4	High
Southeast Polk Schools 1	Construction of Multi-purpose Safe Rooms District Wide	Tornado, Windstorm	Both	Southeast Polk Schools	Public referendum; FEMA HMA Grants	Medium-Term	Structure and Infrastructure Projects	Continuing	4	High
Southeast Polk Schools 2	Internal and outward-facing electronic communications for emergency/disaster mitigation	Animal/plant/crop disease, climate change, cyberattack, dam failure, drought, earthquake, expansive soils, extreme temperatures, flash flooding, grass or wildland fire, hazardous materials incident, levee failure, river flooding, sinkholes/ landslides, structural fire, thunderstorm with lightning and hail, tornado, transportation incident, windstorm, winter storm	Both	Southeast Polk Schools	Iowa School Safety Grant; FEMA preparedness Grants	Medium-Term	Local Plans and Regulations	Continuing	2	Medium

2024 Mitigation Action Plan										
Action ID	Mitigation Project / Activity Description	Hazards Addressed	Impacts Existing or New Structures	Responsible Agency or Entity	Potential Funding Sources	Expected Time Frame for Completion	Project Type	Action Status (New or Continuing)	Goal #	Priority (H/M/L)
Southeast Polk Schools 3	Emergency Radios in all schools	Animal/plant/crop disease, climate change, cyberattack, dam failure, drought, earthquake, expansive soils, extreme temperatures, flash flooding, grass or wildland fire, hazardous materials incident, levee failure, river flooding, sinkholes/ landslides, structural fire, thunderstorm with lightning and hail, tornado, transportation incident, windstorm, winter storm	New	Southeast Polk Schools	Iowa School Safety Grant; FEMA preparedness Grants	Medium-Term	Local Plans and Regulations	Continuing	2	Medium
Southeast Polk Schools 4	Replace antiquated district surveillance cameras and install new systems in all schools	Animal/plant/crop disease, climate change, cyberattack, dam failure, drought, earthquake, expansive soils, extreme temperatures, flash flooding, grass or wildland fire, hazardous materials incident, levee failure, river flooding, sinkholes/ landslides, structural fire, thunderstorm with lightning and hail, tornado, transportation incident, windstorm, winter storm	New	Southeast Polk Schools	Iowa School Safety Grant; FEMA preparedness Grants	Medium-Term	Local Plans and Regulations	Continuing	2	Medium
Urbandale Schools 1	Implement Emergency Operations Plan	Animal/plant/crop disease, climate change, cyberattack, dam failure, drought, earthquake, expansive soils, extreme temperatures, flash flooding, grass or wildland fire, hazardous materials incident, levee failure, river flooding, sinkholes/ landslides, structural fire,	Existing	Urbandale Schools	Physical Plant and Equipment Levy; Secure an Advanced Vision for Education	Long-Term	Local Plans and Regulations	Continuing	2	Medium

2024 Mitigation Action Plan										
Action ID	**Mitigation Project / Activity Description**	**Hazards Addressed**	**Impacts Existing or New Structures**	**Responsible Agency or Entity**	**Potential Funding Sources**	**Expected Time Frame for Completion**	**Project Type**	**Action Status (New or Continuing)**	**Goal #**	**Priority (H/M/L)**
		thunderstorm with lightning and hail, tornado, transportation incident, windstorm, winter storm								
Urbandale Schools 2	Ballistic film and Glazing	Tornado, Active Shooter (Not Profiled)	Both	Urbandale Schools	Physical Plant and Equipment Levy; Secure an Advanced Vision for Education; HMA grants; school preparedness grants	Medium-Term	Structure and Infrastructure Projects	Continuing	4	High
Urbandale Schools 3	Internal Locking Capabilities at District Buildings	Active Shooter (Not Profiled)	Existing	Urbandale Schools	Physical Plant and Equipment Levy; Secure an Advanced Vision for Education; school preparedness grants	Medium-Term	Structure and Infrastructure Projects	Continuing	4	High
Urbandale Schools 4	Opening access to internal/external cameras in school buildings to the Urbandale Police Department. This provides them immediate access in an emergency situation so they can have eyes on everywhere. Training will continue as they identify appropriate staff.	Animal/plant/crop disease, climate change, cyberattack, dam failure, drought, earthquake, expansive soils, extreme temperatures, flash flooding, grass or wildland fire, hazardous materials incident, levee failure, river flooding, sinkholes/ landslides, structural fire, thunderstorm with lightning and hail, tornado, transportation incident, windstorm, winter storm	Both	Urbandale Schools	Physical Plant and Equipment Levy; Secure an Advanced Vision for Education; school preparedness grants	Medium-Term	Structure and Infrastructure Projects	New	2, 3, 4	High

2024 Mitigation Action Plan										
Action ID	Mitigation Project / Activity Description	Hazards Addressed	Impacts Existing or New Structures	Responsible Agency or Entity	Potential Funding Sources	Expected Time Frame for Completion	Project Type	Action Status (New or Continuing)	Goal #	Priority (H/M/L)
Urbandale Schools 5	Allow the Urbandale Police Department to use empty facilities and occupied facilities after hours to train. This provides them with a familiarity of the buildings should they need to come into a situation.	Animal/plant/crop disease, climate change, cyberattack, dam failure, drought, earthquake, expansive soils, extreme temperatures, flash flooding, grass or wildland fire, hazardous materials incident, levee failure, river flooding, sinkholes/ landslides, structural fire, thunderstorm with lightning and hail, tornado, transportation incident, windstorm, winter storm	Both	Urbandale Schools	Physical Plant and Equipment Levy; Secure an Advanced Vision for Education; school preparedness grants	Medium-Term	Local Plans and Regulations	New	2, 3, 4	High
Urbandale Schools 6	Increase the number of internal/external cameras in school buildings to ensure all areas are captured.	Animal/plant/crop disease, climate change, cyberattack, dam failure, drought, earthquake, expansive soils, extreme temperatures, flash flooding, grass or wildland fire, hazardous materials incident, levee failure, river flooding, sinkholes/ landslides, structural fire, thunderstorm with lightning and hail, tornado, transportation incident, windstorm, winter storm	Both	Urbandale Schools	Physical Plant and Equipment Levy; Secure an Advanced Vision for Education; school preparedness grants	Medium-Term	Structure and Infrastructure Projects	New	2, 3, 4	High
West Des Moines Schools 1	Installation of FEMA compliant safe rooms/areas in three elementary school buildings.	Tornado	Existing	West Des Moines Schools	Capital Improvement Funds; FEMA HMA Grants	Medium-Term	Structure and Infrastructure Projects	Continuing	4	High

2024 Mitigation Action Plan										
Action ID	Mitigation Project / Activity Description	Hazards Addressed	Impacts Existing or New Structures	Responsible Agency or Entity	Potential Funding Sources	Expected Time Frame for Completion	Project Type	Action Status (New or Continuing)	Goal #	Priority (H/M/L)
West Des Moines Schools 2	Installation of FEMA compliant safe room/area in a Jr. High building.	Tornado	Existing	West Des Moines Schools	Capital Improvement Funds; FEMA HMA Grants	Medium-Term	Structure and Infrastructure Projects	Continuing	4	High
West Des Moines Schools 3	Installation of generator(s) to serve the FEMA compliant safe rooms/areas in three elementary buildings.	Tornado	Existing	West Des Moines Schools	Capital Improvement Funds; FEMA HMA Grants	Medium-Term	Structure and Infrastructure Projects	Continuing	4	Medium
West Des Moines Schools 4	Installation of generator (s) to serve the FEMA compliant safe room/area in a Jr. High building	Tornado	Existing	West Des Moines Schools	Capital Improvement Funds; FEMA HMA Grants	Medium-Term	Structure and Infrastructure Projects	Continuing	4	Medium

4.5. PRIORITIZATION OF MITIGATION ACTIONS

As noted above, the mitigation actions included in the 2024 Polk County Hazard Mitigation Plan do not represent a commitment by participating communities to take on every listed action. Rather, this is a list of *potential* actions that they may wish to pursue, depending in the availability of funding. When determining how to use available hazard mitigation funding, or identifying (during annual plan reviews) which actions to pursue in the coming year, the HMPC will consider the following factors when identifying priority actions:

- The benefit-cost ratio (BCR) of proposed projects
    - BCR is a measure of the return on investment the community can expect to receive, and one of the most important factors in determining whether or not to implement an action
    - Communities may opt to conduct a full benefit-cost analysis, or may consider the relative costs and benefits qualitatively, depending on the availability of detailed project cost information.
- Degree to which the project impacts or protects life safety
- Degree to which the project reduces the need for response actions
- Size of the population who would benefit from the action
- Benefit to the county's economy overall
- Useful life of project, taking into consideration the expected impacts of climate change
- Benefits to underserved communities
- Other non-monetary benefits not specified here

4.6. CITY OF CLIVE ACTION DEVELOPMENT PROCESS

The City of Clive planning team reviewed a range of flood mitigation activities that could prevent or reduce the severity of community impacts. Although some concepts were newly discussed, a majority of the potential list of actions included ideas that have been previously evaluated in the City's Comprehensive Plan, Walnut Creek Watershed Master Plan, Greenbelt Master Plan, Water Resources Master Plan and/or University Boulevard Neighborhood Flood Mitigation Plan processes. A summary of the activities explored have been categorized into the following types:

Preventive Actions: Those actions that have the potential to keep flooding impacts from getting worse. The most beneficial tool that has been leveraged in the community is associated with the acquisition of floodplain property for incorporation in the City's Greenbelt Park. Beyond preventing people/buildings from developing in the floodplain in the first place, a number of other regulatory program have been previously discussed as a means of helping to reduce the need for on-going emergency operations during flood events. As the community is generally built-out, the political and social costs associated with imposing higher regulatory standards is challenging. Continued advanced planning solidifying the "why" will be important if these items are able to be moved forward.

- Continue to Acquire Undeveloped Floodplain/Floodway Property
- Enhance Flood Disclosure Notification (State Code)
- Enhance Dam Safety Program
- Develop Formal Debris Management Program
- Expand Stormwater Detention Basin Maintenance Program
- Expand Storm Sewer Network Modeling (pluvial flooding impacts)
- Update Floodplain Development Regulations (future conditions)
- Update Building Codes (future conditions)
- Consider "no net impact" floodplain development
- Develop Flood Mitigation Plan for Indian Hills/Swanson Blvd Neighborhood
- Increase Stormwater Management Requirements (greenfield)
- Increase Stormwater Management Requirements (redevelopment)
- Formalize Substantial Improvement Program
- Complete Flood Study for Remaining A Zone Area Prior to Development

Property Protection: Currently there are approximately 350 private properties located in the Walnut Creek floodplain. Of those, approximately 250 buildings have legitimate exposure to the current 100-year flood event based on the previously completed damage assessment modeling. Many of the buildings most at-risk are associated with Pre-FIRM construction standards and are repetitively

damaged during marginal flood events (less than 50-year flood events). In the event of a 100-year flood, the a significant number of the Pre-FIRM buildings will be substantially damaged. With that understanding of the current condition, let alone the anticipated future conditions, the continuation of the University Boulevard Flood Buyout Program is the primary implementation activity in this category. Although the funding needs are significant, the positive BCR and the availability of Federal funds suggests the opportunity to achieve long-term success (21 acquisitions completed since 2019 - 31 additional at-risk properties remain).

The high priority has been given to the University Boulevard neighborhood area, however, the future flood conditions due suggest that additional advanced flood mitigation planning for the Indian Hills neighborhood would be prudent. To date, this neighborhood (approximately 200 single family homes) fears flood insurance costs more than it does actual flooding as the repetitive flood events in the community have not significantly impacted this neighborhood. During a 100-year flood event, there is significant potential for building and life safety impacts as many of the homes have basements (previous FEMA approval for structural basement foundations) designed to the 1980 flood standards. In addition to the advanced planning to better understand the potential risks, it is expected that the quality/condition of the existing buildings will support retrofitting (in lieu of buyout acquisition) which will require new staff skill sets and additional public education.

- Continue Flood Buyout Program (University Boulevard)
- Acquire Building Elevation Data/Update Damage Assessment Model
- Private Property Flood Mitigation Technical Assistance (University Blvd)
- Enhance Flood Insurance Marketing
- Expand Staff Training (Floodproofing)
- Consider Cumulative Substantial Improvement

Natural Resource Protection: Integral to the community character is its long standing commitment to incorporation of the City's natural resources into the design of its neighborhoods. Since the mid-1970's, the City has been active in the acquisition of Walnut Creek floodplain property and development of a linear "Greenbelt Park" trail along Walnut Creek. The City currently owns nearly 50% of the floodplain property and has plans to continue with acquisitions both from a conservation perspective as well as floodplain management. With nearly 500 acres of floodplain land, the City has also more recently turned its attention of maximizing the utility of the floodplain beyond its primary park function. Projects and activities around vegetation management, streambank stabilization and oxbow/wetland construction are all part of the suite of multi-beneficial natural floodplain activities that have been evaluated.

- Continue Implementation of Greenbelt Vegetation Management Plan
- Develop Broader Forestry Master Plan (plant diversity of native trees)

- Continue to Incorporate Natural Channel Design into Greenbelt Improvements
- Reconnect Incised Walnut Creek with Floodplain (Channel Improvements)
- Continue to Install Ox-bow and Wetlands in Floodplain
- Continue to Disconnect Storm Sewer System from Stream Channel
- Enhance Solid Waste Management (prevention prior to stream cleanup)
- Maximize Sponginess of Floodplain

Emergency Services: Although the creation of a resilient Walnut Creek floodplain is the long-term over arching goal of the community, having the day-to-day capability of addressing the community needs associated with flooding will continue to be necessary well into the future. The flashy characteristics of the flooding events along Walnut Creek result in the need for as much "warning time" as possible. Additionally, the frequency of the flooding events requires that emergency operations and response plans are unambiguous and continually improved. As the community continues to suffer from repetitive flood events, formalizing damage assessment and reconstruction processes is a growing need. Actions that enhance the City's existing capabilities to response to and recover from the growing risks of Walnut Creek flooding are of paramount importance.

- Enhance Walnut Creek Early Warning System (Updated 28-E)
- Enhance Flood Prediction Modeling/Capabilities (IFC and NWS)
- Expand Annual Flood Preparedness Simulations to Dam Failure/Regional Response Events
- Formalize Substantial Damage Program

Structural Projects: A number of structural flood control activities have been previously evaluated for the University Boulevard neighborhood area, however, none of the efforts have address all of the community needs for the long term. Depending on the ultimate disposition of the buyout program, some structural solutions may be necessary and cost benefitted, however, those are not currently the priority for the University Boulevard neighborhood.

Although the SilverJackets studies paint a clear picture that the City of Clive is not going to be able to meaningfully address the source of flooding within its boundary (or solely within its financial capacity), there may be opportunities to reduce the frequency/severity of the future flood conditions through upstream watershed improvements. Continuing to partner with the communities in the Walnut Creek Watershed Management Authority to further explore the regional benefits of headwater improvements has been determined to be a worthwhile long-term use of the City's resources.

- University Boulevard Levy/Floodwall

- Reconstruction of Railroad Bridge
- Reconstruction of NW 86th Street Bridge
- Reconstruction of Greenbelt Trail Bridges
- Walnut Creek Stream Channel Improvements
- Regional Walnut Creek Detention Basins/Reservoirs

Public Information: As stated above, the City of Clive is well aware that it can not "solve" the flooding impacts in the community. Private property owners will need to be continually engaged from both the prevention as well as the preparation lenses. Property owners must have access to all of the actional information that will allow them to make informed decisions about their property and their financial investments. With the current and growing flood risks and the nature of transitional property ownership, continual public education will be necessary to ensure that residents are able to protect themselves when flood events do occur.

- Creation of Formal Program for Public Information Committee/Plan (CRS 330)
- Enhanced Floodplain Mapping/Property Information Service
- Regionalize Public Education/Outreach (countywide approach)

Based on a discussion of the merits/benefits of the various actions and preliminary evaluation of the relative capital, social and political costs, the City of Clive planning team narrowed the list of possible actions down to those that were perceived to be viable for implementation within the next 10-years.

The 2024 Mitigation Action List identifies a range of cost effective actions that the City of Clive and County believe are capable of addressing both current and future risks. The list includes clarity around who is responsible for implementation, the expected time frame for completion, and how it will be funded.

Although the 2024 Mitigation Action List is generally not "prioritized", the City of Clive projects have been prioritized by the City's planning committee and validated during the June community engagement (1 is highest priority, 31 is lowest priority).

1. Update Flood Response and Recovery Plan
2. University Blvd Neighborhood Flood Mitigation Planning and Implementation
3. Walnut Creek Floodplain Acquisitions
4. North Walnut Creek Floodplain Acquisitions
5. Floodplain Vegetation Management Planning and Implementation
6. Update City Technology Plan (Cyber Security)

7. Relocate University Blvd Water Pump Station (critical facility)
8. Indian Hills Neighborhood Flood Mitigation Planning and Implementation
9. Update Floodplain Development Regulations
10. Enhance Communications (public education and warning)
11. Walnut Creek Watershed Streambank/Buffers/Wetlands/SW/Flood Control Improvements
12. Sub-watershed Stormwater/Flooding Planning and Implementation
13. Mitigate Flooding Threat to Public Works Facility (critical facility)
14. Relocate Porter Shelter
15. Flood Insurance Coverage Planning and Implementation
16. Natural Floodplain Function Planning and Implementation
17. Obtain CRS Class 4 Status
18. Mitigate Flooding Threat to Aquatic Center
19. Stormwater Detention Basin Maintenance Planning and Implementation
20. Reconstruct Greenbelt Trail Bridges
21. Update Building Codes
22. Drainage System Maintenance Planning and Implementation
23. Regional Stormwater Management Facilities (modifications)
24. North Raccoon River Watershed Streambank/Buffers/Wetlands/SW/Flood Control Improvements
25. Building Energy Efficiency Planning and Implementation (public response facilities)
26. Install/Replace Backup Generators
27. Forestry Management Planning and Implementation
28. Backflow Prevention Planning and Implementation (sewer drains)
29. Swanson Boulevard Flapgates
30. Reconstruct NW 86th Street Bridge
31. Reconstruct Railroad Bridge (7800 Block of University Boulevard)

Chapter 5:

Plan Maintenance Process



CHAPTER 5: PLAN MAINTENANCE PROCESS

This chapter provides an overview of the overall strategy for plan maintenance and outlines the method and schedule for monitoring, updating and evaluating the plan. The chapter also discusses incorporating the plan into existing planning mechanisms and how to address continued public involvement.

5.1. MONITORING, EVALUATING, AND UPDATING THE PLAN

With adoption of this plan, the HMPC will be tasked with plan monitoring, evaluation and maintenance. The participating jurisdictions and agencies, led by the Polk County Emergency Management Director, agree to:

- Meet annually, and after a disaster event, to monitor and evaluate the implementation of the plan and its mitigation actions, including documenting any progress made towards each action every year;
- Act as a forum for hazard mitigation issues;
- Disseminate hazard mitigation ideas and activities to all participants;
- Pursue the implementation of high priority, low- or no-cost recommended actions;
- Maintain vigilant monitoring of multi-objective, cost-share, and other funding opportunities to help the community implement the plan's recommended actions for which no current funding exists;
- Monitor and assist in implementation and update of this plan;
- Keep the concept of mitigation in the forefront of community decision making by identifying plan recommendations when other community goals, plans, and activities overlap, influence, or directly affect community vulnerability to disasters;
- Report on progress made towards implemention of specific mitigation actions;
- Report on plan progress and recommended changes to the Polk County Board of Supervisors and governing bodies of participating jurisdictions; and
- Inform and solicit input from the public.

The HMPC agrees to meet annually and after a state or federally declared hazard event as appropriate to monitor progress and update the mitigation strategy. To this effect, plan maintenance should monitor implementation, review progress and recommend revisions to the plan during an annual review of the plan and documented through an evaluation report. The annual evaluation report will be submitted to the local governing bodies, released to the media and made available to the public. The

Polk County Emergency Management Director will be responsible for initiating the plan reviews and will invite members of the HMPC to the meeting.

The HMPC is an advisory body and can only make recommendations to county, city, town, or district elected officials. Its primary duty is to see the plan successfully carried out and to report to the community governing boards and the public on the status of plan implementation and mitigation opportunities. Other duties include reviewing and promoting mitigation proposals, hearing stakeholder concerns about hazard mitigation, passing concerns on to appropriate entities, and posting relevant information in areas accessible to the public.

5.1.1 PLAN EVALUATION

The annual evaluation of the plan's progress will also include an evaluation of its effectiveness, which will be achieved by monitoring changes in vulnerabilities identified in the plan. Changes in vulnerability can be identified by noting:

- Decreased vulnerability as a result of implementing recommended actions,
- Increased vulnerability as a result of failed or ineffective mitigation actions, and/or
- Increased vulnerability as a result of new development (and/or annexation).

In order to best evaluate any changes in vulnerability as a result of plan implementation, the participating jurisdictions will follow the following process:

- A representative from the responsible office identified in each mitigation action will be responsible for tracking and reporting on an annual basis to the jurisdictional HMPC member on action status and providing input on whether the action as implemented meets the defined objectives and is likely to be successful in reducing vulnerabilities.
- If the action does not meet identified objectives, the jurisdictional HMPC member will determine what additional measures may be implemented, and an assigned individual will be responsible for defining action scope, implementing the action, monitoring success of the action, and making any required modifications to the plan.

Interim changes can be made to the plan to accommodate for actions that have failed or are not considered feasible after a review of their consistency with established criteria, time frame, community priorities, and/or funding resources. Actions that were not ranked as "high" but were identified as potential mitigation activities will be reviewed as well during the monitoring and update of this plan to determine feasibility of future implementation. Interim formal updates of the publicly-posted plan document may take place via written changes and submissions, as the Polk County HMPC deems appropriate and necessary, and as approved by the Polk County Emergency Management Commission and the governing boards of the other participating jurisdictions. However, individual participating communities can make changes to their own mitigation action lists between formal updates without the need for approval of the Emergency Management Commission.

5.1.2 PLAN UPDATE

In coordination with the other participating jurisdictions, a five-year written update of the plan will be submitted to the Iowa Homeland Security and Emergency Management Division and FEMA Region VII per Requirement §201.6(c)(4)(i) of the Disaster Mitigation Act of 2000, unless disaster or other circumstances (e.g., changing regulations) require a change to this schedule. The HMPC will follow the same process for the 2029 plan update as was used for the 2024 plan. The next plan update will:

- Be supported by the HMPC;
- Consider changes in vulnerability due to action implementation,
- Document success stories where mitigation efforts have proven effective,
- Document areas where mitigation actions were not effective,
- Document any new hazards that may arise or were previously overlooked,
- Incorporate new data or studies on hazards and risks,
- Incorporate new capabilities or changes in capabilities,
- Incorporate growth and development-related changes to inventories, and
- Incorporate new action recommendations or changes in action prioritization.

5.2. INCORPORATION INTO EXISTING PLANNING MECHANISMS

Where possible, plan participants will use existing plans and/or programs to implement hazard mitigation actions. Based on the capability assessments of the participating jurisdictions, communities in Polk County will continue to plan and implement programs to reduce losses to life and property from hazards. Representatives of jurisdictions involved in the development of this plan will work to integrate the ideas, information, and strategies of the plan into other planning mechanisms relevant to their respective communities. This plan builds upon the momentum developed through previous and related planning efforts and mitigation programs and recommends implementing actions, where possible, through the following plans:

- General or master plans of participating jurisdictions;
- Ordinances of participating jurisdictions;
- Polk County Emergency Operations Plan;
- Capital improvement plans and budgets;
- Other community plans within the County, such as water conservation plans, stormwater management plans, and parks and recreation plans;
- School Plans; and
- Other plans and policies outlined in the capability assessment sections for each jurisdiction in Chapter 2 of this plan.

Polk County communities have already demonstrated a willingness to incorporate mitigation actions set forth in hazard mitigation plans. Following the approval of the 2018 Polk County Hazard Mitigation Plan, the mitigation actions set forth in that plan were considered in the creation and implementation of various planning mechanisms including:

- Windsor Heights Flood Reduction and Resiliency Plan (2019)
- Fourmile Creek Water Management Authority Master Plan (drafted 2010, updated 2017, currently being implemented)
- City of Des Moines Climate Action and Adaptation Plan (2023)
- City of Grimes Comprehensive Plan (2018 Update)
- City of Urbandale Comprehensive Plan (2023)

Every participating jurisdiction will be responsible for integrating the findings and actions of the mitigation plan, as appropriate, into all relevant local plans. The HMPC is also responsible for monitoring this integration and incorporating the appropriate information into the five-year update of the multi-jurisdictional hazard mitigation plan, which will be reviewed and discussed in the annual status review meeting.

Additionally, after the annual review of the Hazard Mitigation Plan, the Polk County Emergency Management Director will provide the updated Mitigation Strategy with current status of each mitigation action to the County Commission as well as all Mayors, City Clerks, and School District Superintendents requesting that the mitigation strategy be incorporated, where appropriate in other planning mechanisms.

5.3. CONTINUED PUBLIC INVOLVEMENT

The update process provides an opportunity to publicize success stories from the plan's implementation and seek additional public comment. Information about the annual reviews will be posted in the Des Moines Register, and on the County website following each annual review of the mitigation plan. When the HMPC reconvenes for the update, it will coordinate with all stakeholders participating in the planning process, including those who joined the HMPC after the initial effort, to update and revise the plan. Public notice will be posted and public participation will be invited, at a minimum, through available website postings and press releases to local media outlets, primarily newspapers.



POLK COUNTY
EMERGENCY
MANAGEMENT

RESOLUTION NO. 2025-05

RESOLUTION FOR ADOPTING 2024 POLK COUNTY HAZARD MITIGATION PLAN

WHEREAS, various natural hazards have the potential for causing devastating harm and loss of life and property to the residents of the City of Windsor Heights and will continue to do so; and

WHEREAS, the implementation of hazard mitigation policies and strategies can protect these residents, and significantly reduce the loss of life and property from natural hazards; and

WHEREAS, a concerted effort should be made to address hazard mitigation in our respective policies and programs; and

WHEREAS, hazard mitigation goals and objectives can be effectively developed through participation in the development of a hazard mitigation plan; and

WHEREAS, City of Windsor Heights has participated in a coordinated, countywide effort to update the previous hazard mitigation plan to reflect changes in development, priorities, and risk,

NOW THEREFORE, We, the City Council of the City of Windsor Heights do hereby resolve to adopt the 2024 Polk County Hazard Mitigation Plan.

Passed and approved this 23rd day of January 2025.

_____
Mike Jones, Mayor

ATTEST:

_____
Adam Strait, City Clerk

STAFF REPORT
CITY COUNCIL
January 23, 2025

TO: CITY COUNCIL

FROM: Jim Mease

SUBJECT: Consideration of Equipment Revolving Program (ERP) Ambulance Acquisition

GENERAL INFORMATION

To meet the reasonable timeline as set forth by the ERP, the Fire Department formed an Ambulance Committee. This committee was comprised of both FT and PT staff to gain a broad perspective of ideas and collaboration to ensure an appropriate recommendation was made. Many hours over the last 4 months have been spent discussing, evaluating, and building an emergency vehicle that will serve our residents and neighbors. The recommendation presented will take into consideration overall cost, projected delivery timeline, Iowa preference (as outlined in the Purchasing Policy and Procedures Manual), and services offered post purchase.

Recommendations:

1: **Legacy Emergency Vehicles**

- $389,460.00
- Price includes new cot
- Delivery expected 18 to 24 months
- Iowa Company
- Option for free loaner ambulance if needed

2. **North Central Emergency Vehicles**

- $382, 905.00
- Price includes new cot
- Options not included with last quote, final cost as shown above
- Delivery expected: Possible October 2025, Probable July 2026

3. **Foster Coach Sales, Inc.**

- $399, 135.00
- Price includes new cot
- Delivery expected 36 months

ATTACHMENTS

1. Foster Coach Quotation
2. Legacy Emergency Vehicles Quotation
3. Osage Ambulances Quotation

FOSTER COACH SALES, INC.

903 Prosperity Drive Street P.O. Box 700
Sterling, Illinois 61081

Phone: (815) 625-3276
(800) 369-4215
Fax: (815) 625-7222
Web site: www.fostercoach.com

AF01375

QUOTATION

TO: WINDSOR HEIGHTS FIRE DEPARTMENT
1133 66TH ST
WINDSOR HEIGHTS, IA 50324

DATE: 01/07/25

ATTN: BOARD MEMBERS

REFERENCE: NEW AMBUALNCE

We are pleased to submit the following quotation in accordance with your request and subject to the Terms and Conditions listed below and on the reverse side hereof.

QTY.	DESCRIPTION	EACH	NET PRICE
1	2026-27 FORD F550 4X4 GAS CHASSIS CUSTOM BUILT ON A HORTON 623 ALL ALUMINUM CONVERSION PER ATTACHED BUILD SPECIFICATIONS AND PROPOSAL DRAWINGS. NOTE: LETTERING AND STRIPING ARE NOT INCLUDED IN THE FINAL COST OF THE AMBULANCE.	$ 365,635.00	$ 365,635.00
		$ Total	$ 365,635.00

ACCEPTED BY:_____

TITLE:_____ Date:_____

ESTIMATED DELIVERY:
30 MONTHS PENDING CURRENT BACKLOG

PROPOSED BY:_____
ANDREW FOSTER, VICE PRESIDENT

LEGACY EMERGENCY VEHICLES

FORMAL QUOTE

#197-0001

Dalton Jacobson

Owner/Sales/Service

319-269-9232

dalton.j@legacyemergencyvehicles.com

2453 East Kenyon Ave.

Des Moines, IA 50320

Attention:	Jim Mease
Company Name:	Windsor Heights Fire Dept.
Address:	1133 66th St.
	Windsor Heights, IA 50324
Reference Quote #:	197-0001 4th Draft
Date:	9/23/24
Exp. Date:	1/31/2025

Quantity	Description	Each	Extended
1	LIFE LINE 171” X 96” SUPERLINER TYPE I PASS-THRU ON A 2024 FORD F-450 4WD GAS ENGINE WITH INCLUDED OPTIONS IN FULL QUOTE	$364,249.00	$364,249.00
1	LEGACY EMERGENCY VEHICLES DISCOUNT FOR 10% DEPOSIT OF TOTAL COST OF AMBULANCE ORDER	($5,000.00)	($5,000.00)
1	ADDITIONAL OPTION: STRYKER POWER PRO1 COT (HIGH CONFIG.)	$30,211.00	$30,211.00
	NOTE TO CUSTOMER: YOU DO **NOT** HAVE TO PAY A DEPOSIT. THIS IS ONLY AN OPTION PROVIDED TO THE CUSTOMER. IF YOU ELECT TO NOT PAY A 10% DEPOSIT THEIR WILL BE NO DISCOUNT AND PAYMENT IS DUE IN FULL UPON DELIVERY.		$0.00
	NOTE: LEGACY EV WILL TAKE CARE OF THE $1,000 PRICE INCREASE IN JANUARY SO THAT WE ARE ABLE TO EXTEND THE EXPIRATION DATE.		$0.00
		Total	$389,460.00

Date:

Title:

Accepted By:

By signing the customer is agreeing to purchase the products or ambulance conversion as stated in the work order/quote with options agreed upon by customer and dealer. Signing this document gives the dealer permission to submit a PO in order to process that quote/work order. Payment is due upon delivery.

In the event that the customer is trading in a used ambulance they reserve the right to not accept the trade in offer we provided up until delivery of the new unit ordered.

Thank you for your business. It’s a pleasure to work with you on your order.

Sincerely yours,
Dalton Jacobson
Legacy Emergency Vehicles
2453 East Kenyon Ave.
Des Moines, IA

LEGACY

EMERGENCY VEHICLES

Windsor Heights Fire/EMS Department
Chief Jim Mease
1133 66th St.
Windsor Heights, IA 50324

December 26, 2024

Thank you for allowing North Central Emergency Vehicles and Osage Ambulances the opportunity to provide a proposal for a new 2028 F 550 Gas Ambulance. We remain very interested in earning your trust and your business.

Since 2021 the world has seen an unprecedented change in supply chain and pricing.

The industry has seen Ford continuing to increase prices on the chassis that we ordered last year. The Ford rebates are not being confirmed and Osage, while they will honor there pricing, they will not honor Fords pricing. We are estimating all proposals and not including the Ford rebate in the totals. (We do think there will be some rebate from Ford, but we have no idea how much).
Stryker Products have announced a large increase (10%) as well and new freight charges.

Ambulance Proposal

2027-2028 F 550 4 x 4 GAS Chassis with custom Osage Super Warrior Body; $ 328,540.00
Please note Ford Chassis pricing is subject to change.

See attached memo for additional options.

Less Ford GPC - Any Rebates will be used to reduce final invoice
This proposal shall be honored for thirty days and may be extended if approved by Osage.
Delivery time shall be the first quarter 2028 Or sooner depending on order date.

Stryker Power Load – installed – estimated price for 2027 --- $ 33,500.00

Thank you.

Respectfully,

David B. Cole
Iowa Sales Rep

Cell 574 584 4174 **Insales@Northcentralambulance.com** **osageambulances.com**

STAFF REPORT
CITY COUNCIL
January 23, 2025

TO: CITY COUNCIL

FROM: Adam Plagge, City Administrator

SUBJECT: Consideration of Resolution No. 2025-07 - A Resolution Accepting The Acquisition Of Real Estate Interests And Authorizing Acquisition Of Such Real Property

GENERAL INFORMATION

The property owner has agreed to the previously proposed $170,000 purchase price for the property.

The upstairs unit tenant has been unwilling to grant access to their unit and since a dog resides in the unit, staff has not accessed the unit. As such, the property owner has agreed to provide the property with both the upstairs and downstairs vacant, which Administration believes is preferable. This is anticipated to occur in February. Staff has reviewed relatively recent photos of the upstairs and has agreed if the unit remains in substantially the same condition, closing can proceed subject to City Council execution of the purchase agreement. The City does reserve the right in the addendum to walk through the upstairs unit prior to closing and discuss any issues that may be identified.

A depression in the front yard was identified by staff during a walk-thru of the property, because a small section of the sanitary sewer lateral is orangeburg the lateral was televised. The lateral was found to be in acceptable condition.

Administration has been in contact with Lutheran Family Services Refugee Housing of Iowa and they remain interested in utilization of the property. A walk-thru with Lutheran Family Services will be scheduled when the upstairs unit is vacated.

Administration recommends executing the purchase agreement with closing funds paid from the Economic Development Fund.

ATTACHMENTS

1. KW 916 - Purchase Agreement V3 03142023 DMAAR 495 - Signed

2. KW 916 - Addendum to Purchase Agreement #101 0822 - Signed
3. Seller Disclosure - October - Signed
4. KW 916 - Lead-Based Paint Disclosure 0623 #006 - Signed - Signed
5. Resolution No. 2025-07 - Authorizing 1151 65th St. Property Purchase

Docusign Envelope ID: 9EA7863D-6B34-4D8C-BA21-847AB697FA44

PURCHASE AGREEMENT

This is an approved uniform DMAAR Purchase Agreement Form

706794

DATE: 12/18/2024 **MLS Number:** _____

***AGENCY AGREEMENT**: In this Agreement, it is understood and agreed to by the parties, the Selling Agent(s) exclusively represents the BUYER(S). The Listing Agent(s) exclusively represents the SELLER(S). If the same Agent represents both BUYER(S) and SELLER(S), a Consensual Dual Agency form must accompany this Agreement. BUYER(S) and SELLER(S) acknowledge their respective Agent(s) made a written disclosure of the type of representation being provided.*

TO: Cardinal I LLC, Connor Duchen SELLER(S)

FROM: _____ BUYER(S)

BUYER(s) offers to buy the real property situated in Polk (county) West Des Moines (city), Iowa, locally known as 1151 65th Street and legally described as: S 60F N 147.4F LOT 10 HOPKINS WOEHLER PLACE subject to and together with any reasonable easements, zoning restrictions, restrictive covenants and mineral reservations of record, if any, and offer the following terms:

PURCHASE PRICE: The purchase price shall be $170,000.00 and method of payment as follows: Earnest money via check or electronic transfer of $1,000.00 to be provided within 3 days after written acceptance of this Agreement; to be deposited and held in Trust by Keller Williams GDM.
If earnest money is not delivered within this time, this Agreement may be voidable at the option of the SELLER(S) until earnest money is delivered.

The balance of the purchase price shall be paid as indicated below. Select all that apply, (A) through (G):

☐ **A. NEW MORTGAGE:** This Agreement is contingent upon BUYER(S) obtaining full loan approval in writing for a new mortgage. Mortgage type shall be _____ for not more than _____% of the purchase price with note interest at _____% or less, with a term no less than _____ years. BUYER(S) agrees upon acceptance of this Agreement to immediately make application with a lender for such mortgage and to make their best good faith effort to obtain mortgage. BUYER(S) to provide SELLER(S) a written preliminary approval within _____ days from acceptance of Agreement. This preliminary approval must show BUYER(S) has the ability to qualify for the loan amount and terms above, subject only to such reasonable and customary conditions as the lender typically imposes. Written final loan commitment shall follow, with ALL lender contingencies met including appraisal, if required, on or before _____ days prior to closing. If BUYER(S) does not provide final loan commitment, SELLER(S) may rescind this Agreement by giving written notice any time after to BUYER(S), stating if required documentation is not provided within 5 days of receipt of notice, then this Agreement shall be null and void. If SELLER(S) does not give such written notice, then this Agreement shall remain valid until the BUYER(S) has provided a final loan commitment or denial. In addition to the proceeds of the mortgage, BUYER(S) shall pay the balance of purchase price, in cash at the time of closing with adjustment for closing costs to be added or deducted.
  ☐ BUYER(S) to pay all customary actual closing and loan costs.
  ☐ SELLER(S) to pay BUYER(S) actual closing and loan costs (including origination fees and discount points) and prepaid expenses not to exceed $_____.

☐ **B. ASSUMPTION OR CONTRACT FOR DEED:** See attached Financing Addendum

☒ **C. CASH:** BUYER(S) will pay the balance of the purchase price in cash at the time of closing with adjustment for closing costs to be either added or deducted. This Agreement is not contingent upon BUYER(S) obtaining such funds to close. SELLER(S) has the right to request and receive verification of funds within 5 days of written acceptance.

☐ **D. APPRAISAL:** This Agreement is contingent upon the property appraising at or above the purchase price. Appraisal to be completed no later than 10 days prior to closing. Obtaining an appraisal is BUYER(S) and/or Mortgage Lender's responsibility.

☐ **E. SUBJECT TO CLOSING:** This Agreement is contingent upon BUYER(S) closing and obtaining proceeds from the sale of their property located at _____ scheduled to close on or before _____.

☐ **F. SUBJECT TO SALE:** This Agreement is contingent on the sale of BUYER(S) property. See attached Subject to Sale Addendum.

☐ **G. OTHER FINANCING TERMS:** _____

CLOSING: Closing shall be on or about (date) 2/4/2025. This transaction shall be considered closed upon delivery for recording of all documents required to convey marketable title to the BUYER(S) and receipt of all funds by the settlement agent.

POSSESSION: To be given ☒ at time of closing, or ☐ on (date) _____ (time) _____ ☐AM ☐PM.

FINAL WALKTHROUGH: The BUYER(S) shall be permitted to do a final walkthrough of the property prior to possession or closing, whichever is sooner, to determine there have been no changes to the condition of the property, ordinary wear and tear excepted.

HOME WARRANTY: A home warranty shall be included with this sale: ☐ Yes ☒ No. Warranty to be paid for by ☐ SELLER(S) ☐ BUYER(S). Warranty Company_____ Plan_____ Cost $_____

INCLUDED PROPERTY: All property integrally belonging to, specifically adapted to, or part of the real estate (except rental items disclosed in writing), whether attached or detached including but not limited to:

- Attached satellites and/or antennas for TV or radio
- Attached brackets for television or audio
- Built in sound systems
- Installed security systems or alarm devices
- Thermostats
- Doorbells
- Attic and ceiling fans and remotes if any
- Bathroom mirrors and other attached mirrors
- Attached shelving
- Window treatments
- Attached or fitted floor coverings
- Built in appliances
- Light fixtures and bulbs
- Central vacuum systems and accessories
- Fireplace screens, grates, equipment, and remotes
- Water softeners and purifiers
- Sump pumps
- Fences including inground and receiving collars
- Garage door opener and controls
- Outdoor buildings or sheds
- Outdoor in-ground plants
- Landscaping and lighting
- In-ground lawn sprinkler systems and components
- Keys to the property including mailboxes

OTHER INCLUDED ITEMS: n/a

_____

EXCLUDED PROPERTY: n/a

_____

Personal property not included in the sale must be removed at the expense of the SELLER(S) prior to possession.

NEW CONSTRUCTION: If improvements on subject property are under construction or to be constructed, this Agreement shall be subject to approval of plans and specifications by the parties within _____days of final acceptance of this Agreement. New construction shall have warranties implied by law, specifically made by suppliers of materials/appliances, or specifically tendered by the contractor. The Brokers and their Agents make no warranties to quality of construction or materials. Other than express warranties specifically made by suppliers of materials and/or specifically tendered by the contractor, there are no implied or express warranties with regard to such construction.

☐ **HOMEOWNERS ASSOCIATION/COVENANTS:** This Agreement is for a townhome, condominium, or other property subject to a Homeowners Association. Association fees, if any, shall be paid current by SELLER(S) to date of closing. See HOA Addendum.

Docusign Envelope ID: 9EA7863D-6B34-4D8C-BA21-847AB697FA44

DUTIES OF THE PARTIES:

A. The Brokers, their Agents, employees, and associates make no representations or warranties as to the physical condition of the property, its size, future value or income potential.

B. SELLER(S) and BUYER(S) acknowledges that SELLER(S) of real property has a legal duty to disclose Material Defects of which SELLER(S) has actual knowledge and which a reasonable inspection by BUYER(S) would not reveal.

CONDITION OF PROPERTY: Federal Law (known as Title X) requires notification of potentially dangerous levels of lead-based paint in properties built before 1978 (See Lead-Based Paint Disclosure). If applicable, the SELLER(S) will provide the BUYER(S) with copies of any records or prior test results pertaining to lead-based paint findings. Any Sellers' Disclosure of Property Condition form required by Chapter 558A of the Code of Iowa is incorporated herein as if fully and completely set forth in this paragraph. The property as of the date of this Agreement, including buildings, grounds, and all improvements, will be preserved by the SELLER(S) in its present condition until possession, excluding ordinary wear and tear.

INSPECTIONS OF PROPERTY: A home inspection is not intended to bring an older home into compliance with current local building codes and in no way affects any improvements to the property that may be required by Buyer's lender.

BUYER(S) shall CHOOSE ONE of the following alternatives relative to the condition of the property:

☐ **1.** Within _____ days after the Acceptance Date of this Agreement, BUYER(S) may, at their sole expense, have the property inspected by a qualified person(s) of Buyer's choice to determine if there are any major structural, mechanical, environmental (including radon gas or fungal), roof, plumbing, electrical, siding, lead-based paint, or other deficiencies existing at the property which would constitute a hazard to any occupant of the property.

Within this same period, BUYER(S) may notify SELLER(S) in writing what requests, if any, are being made of the SELLER(S) to correct the deficiencies disclosed by BUYER(S) as a result of the inspection. SELLER(S) shall have 3 days to notify BUYER(S) in writing what steps, if any, the SELLER(S) will agree to in order to correct the deficiencies identified by the BUYER(S).

If SELLER(S) declines to correct identified deficiencies from BUYER(S), BUYER(S) has 2 days from receipt of SELLER'S response to notify the SELLER(S) in writing that:

(A) Such steps are acceptable; in which case this Agreement shall be deemed modified to incorporate the requests agreed to by and between the BUYER(S) and SELLER(S) and shall be binding on all parties.
OR
(B) If parties cannot come to agreeable terms, this Agreement is null and void and the earnest money shall be returned to the BUYER(S).

If BUYER(S) fails to notify SELLER(S) in writing of any requests to correct deficiencies within the specified time period, it shall be deemed as a waiver of the Buyer's inspection and repair rights. BUYER(S) is accepting the property in its present condition.

If SELLER(S) fails to notify BUYER(S) within the specified time period of what requests, if any, the SELLER(S) will agree to in order to correct any deficiencies, it shall be deemed a rejection of the BUYER(S) correction request and the BUYER(S) may declare this Agreement null and void and any earnest money shall be returned to the BUYER(S).

☒ **2.** BUYER(S) acknowledges they have made a satisfactory inspection of the property and are purchasing this property "As-Is" in its present condition, and no repairs or corrections will be made by the SELLER(S).

☐ **3.** BUYER(S) acknowledges the SELLER(S) is selling the property "As-Is" in its present condition, and no repairs or corrections will be made by the SELLER. BUYER(S) may, at their sole expense, have the property inspected by a qualified person(s) of Buyer's choice within _____ days after final acceptance. If as a result of the inspection, BUYER(S) discovers unacceptable findings, BUYER(S) may within this same period, rescind this Agreement and any earnest money shall be returned to the BUYER(S).

Property Address 1151 65th Street West Des Moines IA 50324

☐ **INSPECTION OF PRIVATE SEWAGE DISPOSAL SYSTEM**: Property has a private sewage disposal system or is served by a private sewage disposal system. The septic system shall be inspected and approved for real estate transfer by a licensed DNR inspector as required by Iowa Code 455B.172 (unless exempt) no later than ____ days after acceptance of Agreement unless mutually agreed upon by all parties.

Inspection to be scheduled and paid for by: ☐ **Buyer** ☐ **Seller**

WOOD DESTROYING PEST INSPECTION: If subject property is at least one and not more than a four-family residential dwelling, SELLER(S), at their expense, shall have property inspected for termites or other wood destroying pests by a licensed pest inspector prior to closing. If active pest infestation or damage due to prior infestation is found, SELLER(S) shall have option of either treating property by a licensed pest exterminator and having any damage repaired to BUYER(S) satisfaction, or declaring this Agreement void. This shall not apply to fences, trees or shrubs. However, BUYER(S) may accept property in its existing condition without such treatments or repairs.

☐ **RENTAL PROPERTY:** This Agreement is for a property currently being rented/leased. See Rental Addendum.

ADDITIONAL PROVISIONS: ~~Transaction/Compliance Compensation: ☐ Buyer (or) ☐ Seller on behalf of Buyer, Agrees to pay Keller Williams Realty a $495 transaction/compliance fee at time of closing; covering compliance, Administrative costs and records maintenance.~~

Initial CD-LL

INSURANCE: SELLER(S) shall bear risk of loss or damage to the property prior to closing or possession, whichever occurs first and agrees to maintain existing homeowners' insurance. BUYER(S) may purchase additional insurance. If prior to closing substantial damage or destruction occurs and the property cannot be restored to its previous condition on or before the closing date, this Agreement shall be null and void, unless otherwise agreed to by the Parties. However, BUYER(S) has the right to complete closing and receive insurance proceeds regardless of the extent of damage.

ABSTRACT AND TITLE: SELLER(S) shall promptly provide an abstract of title continued to and including date of acceptance of this Agreement. Abstract shall be delivered to an attorney (selected by BUYER(S) or their lender) for a title opinion. SELLER(S) agrees to make every reasonable effort to promptly perfect the title in accordance with such opinions so that upon conveyance, title shall be deemed marketable in compliance with this Agreement and land title laws of the State of Iowa or title policy. If closing is delayed due to SELLER(S) inability to provide marketable title, this Agreement shall continue in force and effect until either party rescinds the Agreement after giving 5 days written notice to the other party and the Brokers. The SELLER(S) shall not be entitled to rescind unless they have made a reasonable effort to produce marketable title. With Buyer's approval, SELLER(S) has option to provide title through an owner's title guarantee or title insurance policy purchased for BUYER(S) by SELLER(S) or lender to protect the lender's interest in the property.

SURVEY: BUYER(S) may have the property surveyed at their expense not to exceed 10 days after the final acceptance of this Agreement. If survey, certified by a registered land surveyor, shows any encroachments or improvements located on subject property encroach on land of others, they shall be treated as a title defect.

PROPERTY TAXES: SELLER(S) shall pay all real estate taxes related to the property that are liens for prior years and all those due and payable in the fiscal year of closing. All real estate taxes for the fiscal year in which closing occurs, due and payable in the following fiscal year, shall be prorated to the date of closing, with such proration based upon applicable assessed value(s), rollback(s), exemption(s) and levy of record at the time of closing. SELLER(S) shall pay any real estate taxes due and payable on or before the date of closing, with BUYER(S) receiving credit at closing for any remaining unpaid real estate taxes for which SELLER(S) is responsible under this section. If this Agreement is for a contract purchase, see Financing Addendum.

SPECIAL ASSESSMENTS: SELLER(S) shall pay in full all special assessments that are liens on the property as of the date of closing. Any preliminary or deficiency assessments which cannot be discharged by payment at closing shall be paid through a written escrow account with sufficient funds to pay liens when payable, with unused funds to be returned to the SELLER(S) without further signatures of the BUYER(S). All charges for solid waste, trash removal, sewage, utility bills and assessments for maintenance that are attributable to Seller's ownership shall be paid by SELLER(S).

Docusign Envelope ID: 9EA7863D-6B34-4D8C-BA21-847AB697FA44

JOINT TENANCY: Upon full payment of purchase price, SELLER(S) shall deliver to BUYER(S) a general warranty deed to this property. If Seller's title is held in joint tenancy, this Agreement shall not sever such joint tenancy. If BUYER(S) is married, their interest shall be held in joint tenancy unless otherwise indicated.

COURT APPROVAL: If the property is an asset of an estate, trust or conservatorship, this Agreement is contingent upon court approval unless declared unnecessary by Buyer's attorney. If necessary, the appropriate fiduciary shall promptly obtain court approval and conveyance shall be made by Court Officers Deed.

FUNDS: At the time of closing, funds of the purchase price, received from BUYER(S) and/or Buyer's lender, may be applied to purchase price, to pay taxes and liens and are to be handled under supervision of the Brokers and subject to approval of Buyer's attorney.

CALCULATING TIME PERIODS IN THIS AGREEMENT: All references to days shall be construed as business days unless otherwise noted. A business day is defined as any day other than weekends or legal state or federal holidays. A day shall begin at 12:00AM and end at 11:59PM. In calculating, the day of the act or event is not included. The last day is included unless that day is a state or federal holiday; in which case the last day shall be the next business day.

NOTICE: Any notice required under this Agreement shall be deemed given when it is received in writing, either by hand delivery, fax, return receipt requested mail, or electronic mail. Persons designated to receive any notice for the purpose of this Agreement shall be the SELLER(S) and BUYER(S) or their respective Agents.

DOCUMENT PREPARATION: Parties request the Listing or Selling Brokerage or any employees, agents or associates select, prepare, and complete form documents as authorized by Iowa law or by the Iowa Supreme Court Rule, such as purchase agreements, groundwater hazard, and declaration of value incident to a residential real estate transaction.

MARKETING: Unless otherwise specified in writing, SELLER(S) acknowledges and agrees the property will not be marketed while this Agreement is in effect.

REMEDIES OF THE PARTIES: If SELLER(S) fails to fulfill this Agreement, BUYER(S) shall have the right to have all payments returned and to proceed by any action at law or in equity. SELLER(S) agrees to pay costs and reasonable attorney fees, and a receiver may be appointed. If BUYER(S) fails to fulfill this Agreement, SELLER(S) may forfeit the same as provided in Chapter 656 of the Code of Iowa, and all payments made herein shall be forfeited, or the SELLER(S) may proceed by an action at law or in equity. The BUYER(S) agrees to pay costs and reasonable attorney fees and any other expense incurred by SELLER(S). In the event of a breach of this Agreement by either SELLER(S) or BUYER(S), the Listing Broker shall be deemed an intended third-party beneficiary of this Agreement and may maintain an action at law against the breaching party for the collection of the Broker's commissions and all costs, including attorneys' fees.

DISPUTE RESOLUTION: If initialed, BUYER(S) and SELLER(S) agree if a dispute or claim arises out of or relating to this Agreement, before exercising any other legal remedies, the dispute or claim shall be submitted to mediation in accordance with the Rules and Procedures of the Des Moines Area Association of REALTORS® Home Seller/Homebuyer Dispute Resolution System. *(Initialing or not Initialing does not constitute a counter offer.)*

BUYER(S) Initials _____ _____ **SELLER(S) Initials** Initial CD-LL _____

GENERAL PROVISIONS: Pertaining to this Agreement, time shall be of the essence. This Agreement shall be binding on and inure to the benefit of the heirs, executors, administrators, assigns and successors in interest of the respective parties. This Agreement, its representations, warranties and covenants shall survive the closing of the transaction and the delivery and recording of all documents necessary to transfer title or an interest in the property to the BUYER(S).

Docusign Envelope ID: 9EA7863D-6B34-4D8C-BA21-847AB697FA44

ACKNOWLEDGEMENT: The signing of this Agreement creates important rights and liabilities on the part of both the SELLER(S) and the BUYER(S). This Agreement is made of free will and shall be good and binding upon the undersigned if accepted below. **This is a legally binding Agreement. If you have concerns regarding your rights and liabilities, you are encouraged to seek competent legal advice.**

BUYER(S) Initials _____ _____ **SELLER(S) Initials** Initial CD-LLC _____

ACCEPTANCE: When accepted, this Agreement shall become a binding contract. If this Agreement is not accepted on or before (date) ~~12/31/2024~~ 1/15/2025 (time) ~~12:00~~ 6:00 pm ☐AM ☒PM, it shall become null and void and all payments shall be repaid to BUYER(S) without liability on the part of any Broker to either party. If accepted by SELLER(S) on a later date and such acceptance is ratified in written or other form by BUYER(S), then this Agreement shall be valid and binding.

Initial CD-LLC

☒ **SEE ATTACHED ADDENDUM(S)**

SELLER(S) ACCEPTANCE: The undersigned SELLER(S) accepts this Agreement and agrees to sell this Property according to the terms offered.

		Signed by: Connor Duchen, Manager, Cardinal I, LLC 12/20/2024 | 18:08 CST	
BUYER'S Signature	**Date**	**SELLER'S Signature**	**Date**
		Cardinal I LLC, Connor Duchen	
BUYER'S Legal Name, (Printed)		**SELLER'S Legal Name, (Printed)**	
BUYER'S Signature	**Date**	**SELLER'S Signature**	**Date**
BUYER'S Legal Name, (Printed)		**SELLER'S Legal Name, (Printed)**	
		Keller Williams Realty Greater Des Moines	
Name of Selling Company & License Number		**Name of Listing Company & License Number**	
		Darson Grantham	
Name of Selling Agent & License Number		**Name of Listing Agent & License Number**	

☐ **SELLER(S) COUNTER-OFFER**: The SELLER(S) submits the following counteroffer to certain terms and conditions of this Agreement as set forth on the attached Counter-Offer.

☐ **SELLER(S) REJECTION**: The SELLER(S) rejects this BUYER'S written offer.

SELLER'S Signature	**SELLER'S Signature**
(Date) _____	**(Time)** _____ ☐**AM** ☐**PM**

Docusign Envelope ID: 9EA7863D-6B34-4D8C-BA21-847AB697FA44

KELLERWILLIAMS

ADDENDUM TO PURCHASE AGREEMENT

MLS: 706794

PROPERTY ADDRESS: 1151 65th Street West Des Moines IA 50324

Pursuant to the Purchase Agreement dated 12/18/2024 by and between

_____ (Buyers) and

Cardinal I LLC, Connor Duchen (Sellers),

The following terms and conditions in the above described Purchase Agreement are hereby amended as follows:

- Seller agrees to provide both units empty at the time of closing. If units are not empty closing will be extended until empty.

- Buyer has the right to request access. Buyer will request 48 hours prior to the day they want access and buyer understands that the current tenant is uncooperative but the seller and team will do everything possible to allow access.

Regarding line 154 of the PA - The Buyer has walked the property exterior, basement and ground floor unit. The Buyer acknowledges these areas were in satisfactory condition at the time of walk-thru and no repairs or corrections will be required of the Seller, subject to no substantial change of condition occurring prior to close. The Buyer has reviewed photos of the upstairs unit and it appears to be in an acceptable condition. The Buyer acknowledges and accepts that there may be normal wear and tear in the upstairs unit from tenant occupation. The Buyer reserves the right to make the final determination regarding the condition of the upstairs unit upon conducting a walk-thru when the upstairs unit is vacated prior to close, and if there is a material deviation in the condition of the upstairs unit, Buyer and Seller shall discuss in good faith.

Initial CD-UC

All other terms and conditions remain unchanged.

BUYER SIGNATURE	DATE	SELLER SIGNATURE	DATE
		Signed by: Connor Duchen, Manager, Cardinal I, LLC	12/20/2024 | 18:08 CS
BUYER SIGNATURE	DATE	SELLER SIGNATURE	DATE

Docusign Envelope ID: 9EA7863D-6B34-4D8C-BA21-847AB697FA44

RESIDENTIAL PROPERTY SELLER DISCLOSURE STATEMENT

This is an approved uniform DMAAR Form

DMAAR
Des Moines Area Association of REALTORS

PROPERTY ADDRESS 1151 65th St Windsor Heights, IA 50324

PROPERTY OWNER(S) Cardinal I, LLC

PURPOSE OF STATEMENT

Completion of this form shall satisfy the requirements of Chapter 558A of the Iowa Code which mandates the SELLER(S) disclosure of the condition of, and information about, the property the SELLER(S) is about to sell unless the property is exempt. This statement shall not be a warranty of any kind by the SELLER(S) or Listing Agent and shall not be intended as a substitute for any inspection or warranty the BUYER(S) may wish to obtain.

EXEMPT PROPERTIES

SELLER(S) is exempt from completing this form on the basis that:

- ☐ The property contains no dwelling units or more than 4 dwelling units.
- ☐ This transfer is between joint tenants or tenants in common.
- ☐ This transfer is to a spouse or a lineal descendent of SELLER(S).
- ☐ This transfer is by a power of attorney.
- ☐ This transfer is between spouses as a result of a dissolution of marriage.
- ☐ This transfer is made pursuant to a court order.
- ☐ Seller is a lender selling a foreclosed property.
- ☐ This transfer is to or from a governmental body.
- ☐ This transfer is by quit claim deed.

If SELLER(S) is an Estate, Conservatorship, or Trust, check the appropriate box below:

Was or will the fiduciary be an occupant in possession of the property at any time within the 12 consecutive months immediately preceding the date of sale of the property?

- ☐ Yes. SELLER(S) to complete disclosure form
- ☐ No. SELLER(S) is exempt from completing disclosure form.

SELLER(S) certifies that the property is exempt from the requirement(s) of Iowa Code 558A because one of the exemptions above. If so: sign and stop here.

Buyer	Date	Seller	Date
Buyer	Date	Seller	Date

SELLER INSTRUCTIONS

Unless EXEMPT as noted above, SELLER(S) must complete this entire RESIDENTIAL PROPERTY SELLER DISCLOSURE STATEMENT and respond to ALL questions, OR attach reports allowed by Iowa Code section 558A.4(2).

SELLER(S) must disclose all known conditions materially affecting this property and provide information in good faith, making a reasonable effort to ascertain the required information.

- If the required information is known, indicate by checking the box **(YES)**
- If there have been no identified or reported issues, indicate by checking the box **(NO)**
- If the required information is unknown, indicate by checking the box **(UNK)**
- If an item does not apply to this property, indicate that it is not applicable **(N/A)**
- If the required information is unavailable following a reasonable effort, use an approximation of the information and identify your response as approximation **(AP)**
- Keep a copy of this statement with your other important papers
- Additional pages may be attached as needed

C), LLC

BUYER INITIALS BUYER INITIALS SELLER INITIALS SELLER INITIALS

© 2024 Des Moines Area Association of REALTORS

Docusign Envelope ID: 9EA7863D-6B34-4D8C-BA21-847AB697FA44

PROPERTY ADDRESS _____

EVERY QUESTION MUST BE ANSWERED AS DIRECTED ON FORM - CHECK ONLY ONE RESPONSE IN EACH STATEMENT

1. Basement/Foundation: Any known water or other problems? See notes ... YES ☒ NO ☐ UNK ☐ N/A ☐
2. Roof: Any known problems? ... YES ☐ NO ☒ UNK ☐ N/A ☐
   Any known repairs? ... YES ☐ NO ☐ UNK ☐ N/A ☒
   If yes, date of repairs/replacement: ____/____/____ AP ☐
3. Well and Pump: (If not applicable, check the box and skip to Question #4) N/A ☒
   Any known problems? ... YES ☐ NO ☐ UNK ☐ N/A ☐
   Any known repairs? ... YES ☐ NO ☐ UNK ☐ N/A ☐
   If yes, date of repairs/replacement: ____/____/____ AP ☐
   Any known water tests? ... YES ☐ NO ☐ UNK ☐ N/A ☐
   If yes, date of last report: ____/____/____ AP ☐
   and results: _____
4. Septic Tanks/Drain Fields: (If not applicable, check box and skip to Question #5) N/A ☒
   Any known problems? ... YES ☐ NO ☐ UNK ☐ N/A ☐
   If yes, explain: _____
   Has the system been inspected by an Iowa DNR certified inspector within 2 years? YES ☐ NO ☐ UNK ☐ N/A ☐
   Date of Inspection: ____/____/____ AP ☐
   Has the system been pumped/cleaned within the last 3 years? ... YES ☐ NO ☐ UNK ☐ N/A ☐
   Date tank last cleaned: ____/____/____ AP ☐
   (Note: If inspected within 2 years of closing date, system may not need inspection, and if pumped within 3 years, system may not need pumping/cleaning)
   General location of system: _____
   Age of system: _____ AP ☐ UNK ☐
5. Sewer System: Any known problems? Sewer line is orangeburg ... YES ☐ NO ☒ UNK ☐ N/A ☐
   Any known repairs? ... YES ☐ NO ☒ UNK ☐ N/A ☐
   If yes, date of repairs/replacement: ____/____/____ AP ☐
6. Heating System(s): Any known problems? ... YES ☐ NO ☒ UNK ☐ N/A ☐
   Any known repairs? ... YES ☐ NO ☒ UNK ☐ N/A ☐
   If yes, date of repairs/replacement: ____/____/____ AP ☐
7. Central Cooling System(s): Any known problems? ... YES ☐ NO ☐ UNK ☐ N/A ☒
   Any known repairs? ... YES ☐ NO ☒ UNK ☐ N/A ☐
   If yes, date of repairs/replacement: ____/____/____ AP ☐
8. Plumbing System(s): Any known problems? See notes ... YES ☐ NO ☒ UNK ☐ N/A ☐
   Any known repairs? ... YES ☐ NO ☒ UNK ☐ N/A ☐
   If yes, date of repairs/replacement: ____/____/____ AP ☐
9. Electrical System(s): Any known problems? ... YES ☐ NO ☒ UNK ☐ N/A ☐
   Any known repairs? ... YES ☐ NO ☒ UNK ☐ N/A ☐
   If yes, date of repairs/replacement: ____/____/____ AP ☐
10. Pest Infestation (termites, carpenter ants, bats, etc.): Any known problems? ... YES ☐ NO ☒ UNK ☐ N/A ☐
    If yes, date(s) of treatment: ____/____/____ AP ☐
    Any known structural damage? ... YES ☐ NO ☒ UNK ☐ N/A ☐
    If yes, date(s) of repairs/replacement: ____/____/____ AP ☐
11. Asbestos: Any known to be present in the structure? ... YES ☐ NO ☒ UNK ☐ N/A ☐
    If yes, explain: _____
12. Radon: Any known tests for the presence of radon gas? ... YES ☐ NO ☒ UNK ☐ N/A ☐
    If yes, date of last report: ____/____/____ AP ☐ and results: _____
13. Lead-Based Paint: Any known to be present in the structure? ... YES ☐ NO ☒ UNK ☐ N/A ☐
14. Flood Plain: Do you know if the property is located in a flood plain? ... YES ☐ NO ☒ UNK ☐ N/A ☐
    If yes, what is the flood plain designation? _____
15. Zoning: Do you know the zoning classification of the property? ... YES ☐ NO ☒ UNK ☐ N/A ☐
    If yes, what is the zoning classification? _____

CD, LLC

BUYER INITIALS _____ BUYER INITIALS _____ SELLER INITIALS _____ SELLER INITIALS _____

© 2024 Des Moines Area Association of REALTORS

Docusign Envelope ID: 9EA7863D-6B34-4D8C-BA21-847AB697FA44

PROPERTY ADDRESS _____

16. Covenants: Is the property subject to restrictive covenants?..... YES ☐ NO ☒ UNK ☐ N/A ☐
    If yes, a true, current copy of the covenants can be obtained:
    ☐ Attached to this Property Disclosure
    ☐ At the _____ county recorder's office
    ☐ Other: _____
17. Shared or Co-Owned Features: Any features of the property known to be shared in common with adjoining landowners, such as walls, fences, roads, and driveways whose use or maintenance responsibility may have an effect on the property?..... YES ☐ NO ☒ UNK ☐ N/A ☐
    Any known "common areas" such as pools, tennis courts, walkways, or other areas co-owned with others, or a Homeowner's Association which has any authority over the property?..... YES ☐ NO ☒ UNK ☐ N/A ☐
18. Physical Problems: Any known settling, flooding, drainage or grading problems?..... YES ☐ NO ☒ UNK ☐ N/A ☐
19. Private Burial Grounds: Does property contain any private burial grounds?..... YES ☐ NO ☒ UNK ☐ N/A ☐
20. Structural Damage: Any known structural damage or modification?..... YES ☐ NO ☒ UNK ☐ N/A ☐
    If yes, what is the damage or modification? _____
21. Has there been a property/casualty loss resulting in an insurance claim? ..... YES ☐ NO ☒ UNK ☐ N/A ☐
    If yes, indicate date(s) _____ Loss type(s) _____
    Loss amount(s) $_____ Correction(s) _____
    _____
22. Are you related to Listing Agent? ..... YES ☐ NO ☒ UNK ☐ N/A ☐

You MUST explain any "YES" response(s) above. Use additional sheets as necessary:

Experienced some water intrusion in 2024 and associated microbial growth; never experienced to Seller's knowledge prior to 2024 when Des Moines experienced seasonally high spring rainfalls; installed sump pump in late summer/early fall to help prevent in the future

Occasional drainage problems in downstairs bathroom sink/tub; has been snaked

Sewer line is orangeburg, but is operational to Seller's knowledge

SELLER(S) DISCLOSURE

SELLER(S) discloses the information regarding this property based on information known or reasonably available.

The SELLER(S) has owned the property since 11 / 18 / 20. The SELLER(S) certifies that as of the date signed this information is true and accurate to the best of my/our knowledge. If any changes occur between the date SELLER(S) completes this form and the date of closing which would result in any of the above disclosures being inaccurate, SELLER(S) shall immediately disclose such changes to BUYER(S) in writing, unless the statement is not required to be amended per 558A.3(2).

SELLER(S) acknowledges requirement that BUYER(S) be provided with the "Iowa Radon Home-Buyers and Sellers Fact Sheet" prepared by the Iowa Department of Public Health.

Manager Cardinal I, LLC 10/30/24

Seller Date Seller Date

BUYER(S) ACKNOWLEDGMENT

BUYER(S) acknowledges receipt of a copy of this Residential Property Seller Disclosure Statement. This statement is not intended to be a warranty or to substitute for any inspection BUYER(S) may wish to obtain. BUYER(S) acknowledges receipt of the "Iowa Radon Home-Buyers and Sellers Fact Sheet" prepared by the Iowa Department of Public Health.

Buyer Date Buyer Date

© 2024 Des Moines Area Association of REALTORS

KELLERWILLIAMS

LEAD-BASED PAINT DISCLOSURE and/or LEAD-BASED PAINT HAZARD

PROPERTY ADDRESS: 1151 65th Street Windsor Heights IA 50324

LEAD-BASED PAINT WARNING:
Every purchaser of any interest in residential real estate property on which a residential dwelling was built prior to 1978, is notified that such property may present exposure to lead from lead-based paint that may place young children at risk of developing lead poisoning. Lead poisoning in young children may produce permanent neurological damage including learning disabilities, reduced intelligence quotient, behavioral problems, and impaired memory. Lead poisoning also poses a risk to pregnant women. The seller of any interest in residential real estate property is required to provide the buyer with any information on lead-based paint hazards from risk assessments or inspections in the seller's possession and notify the buyer of any known lead-based paint hazards. A risk assessment or inspection for possible lead-based paint hazards is recommended prior to purchase.

SELLER'S DISCLOSURE (INITIAL)

Initial: CDM CLL ____ (A) **Presence of lead-based paint and/or lead-based paint hazards (check one below)**:
☐ Known lead-based paint and/or lead-based paint hazards are present in the housing (explain) _____
☒ Seller has no knowledge of lead-based paint and/or lead-based paint hazards in the housing

Initial: CDM CLL ____ (B) **Records and reports available by the seller (check one below)**:
☐ Seller has provided the purchaser with all available records and reports pertaining to lead-based paint and/or lead-based paint hazards in the housing (list documents after next line)
☒ Seller has no reports or records pertaining to lead-based paint and/or lead-based paint hazards in the housing

Name of Document(s)	Inspector/Author	Date of Document

PURCHASER'S ACKNOWLEDGEMENT (INITIAL)

____ ____ (C) **Purchaser has received copies of all information listed above, if available**
____ ____ (D) **Purchaser has received the "Protect Your Family from Lead in Your Home" brochure**
____ ____ (E) **Purchaser has** (check one below):
☐ Received a 10-day opportunity (or mutually agreed upon period) to conduct a risk assessment or inspection for the presence of lead-based paint and/or lead-based paint hazards; or
☐ Waived the opportunity to conduct a risk assessment or inspection for the presence of lead-based paint and/or lead-based paint hazards.

AGENT'S ACKNOWLEDGEMENT (INITIAL)

DG (F) **Agent has informed the seller of the seller's obligations under 42 U.S.C. 4852d and is aware of his/her responsibility to ensure compliance.**

CERTIFICATE OF ACCURACY
The following parties have reviewed the information above and certify, to the best of their knowledge, that the information they have provided is true and accurate.

DocuSigned by: Connor Duchen, Manager, Cardinal I, LLC — 11/2/2024 | 20:47 CDT
Seller Signature — Date — Buyer Signature — Date

Cardinal I LLC, Connor Duchen
Seller Printed Name — Buyer Printed Name

Seller Signature — Date — Buyer Signature — Date

Seller Printed Name — Buyer Printed Name

DocuSigned by: Darson Grantham — 11/2/2024 | 20:19 CDT
Seller's Agent Signature — Date — Buyer's Agent Signature — Date

Darson Grantham — 11/2/2024 | 20:19 CDT
Seller's Agent Printed Name — Buyer's Agent Printed Name

RESOLUTION NO. 2025-07

Resolution Accepting The Acquisition Of Real Estate Interests And Authorizing Acquisition Of Such Real Property

WHEREAS, the Windsor Heights' Urban Renewal Plan call for consideration of certain acquisitions of real estate interests to facilitate redevelopment of the University Avenue Corridor and this property addressed 1151 65th St., Windsor Heights, IA.

WHEREAS, valuations for the permanent real estate interests needed for the project were considered and accepted by the City to determine the compensation to be paid to property owners, and

WHEREAS, the property owner listed on the attached purchase agreement has executed the appropriate documents to convey necessary property to the City for the Project, in accordance with the values approved by the City.

BE IT RESOLVED BY THE CITY COUNCIL OF WINDSOR HEIGHTS, IOWA, that the real estate interests needed for the project as listed in the attached documents are accepted and the City Council authorizes the City Administration to execute necessary agreements and make payment to the property owners in accordance and subject to fulfillment of the terms with the executed agreements.

PASSED AND APPROVED, this 23rd day of January 2025.

_____
Mike Jones, Mayor

ATTEST:

_____
Adam Strait, City Clerk

STAFF REPORT
CITY COUNCIL
January 23, 2025

TO: CITY COUNCIL

FROM:

SUBJECT: Consideration of Resolution No. 2025-10 - A Resolution Approving FY26 Non-Union Salary Ranges

GENERAL INFORMATION

Pontifex has completed a comprehensive salary study for all non-union positions in Windsor Heights. The study analyzed data from rural, suburban, and exurban communities to create three comparative groupings. The aggregated grouping informed the recommended salary ranges, outlined on page 28 of the report. At least three comparable communities in each grouping were used when possible. However, adequate rural data was unavailable for Fire Department (FD) positions, and exurban data points were limited for Police Administrative and Public Works (PW) Equipment Operator positions.

The study highlights that most current incumbents, aside from those in Finance/HR, Police Administration Support, and one PW Equipment Operator/Parks role, have held their positions for less than two years. While some incumbents bring prior experience from equivalent roles in other cities, others are new to these positions. Generally, the midpoint of a salary range reflects incumbents with 5–7 years of experience.

Windsor Heights' Public Works Department is unique for its lack of sanitary sewer or water operations. However, the limited team size requires staff to possess a diverse skill set. To account for a narrower scope of operations, the salary ranges for Public Works Management and City Administration were reduced by 10% to reflect the more limited scope of operations.

The Personnel and Finance Committee has reviewed the report and Administration's recommendations and recommends adopting the attached Salary Ranges which will be utilized to determine appropriate compensation.

Adjustments

The study indicates nearly all salaries are within competitive ranges. Two immediate wage adjustments are recommended.

1. City Clerk: A current fiscal year $3,500 salary increase is recommended to meet the position's minimum range.
2. Finance/HR Director: A current fiscal year increase of $5,000 and a non-COLA increase of $5,000 at the start of next fiscal year is proposed to reflect the incumbent's experience and performance relative to the salary study mid-point.

While no other immediate adjustments are recommended, wages range in conjunction with performance will be reviewed and taken into consideration at the next salary adjustment cycle.

These recommendations aim to ensure competitive and equitable compensation for Windsor Heights employees while maintaining fiscal responsibility. Administration remains committed to revisiting and refining salary ranges to reflect market conditions, financial constraints and employee growth in alignment with City Council's Goals.

ATTACHMENTS

1. Pontifex Compensation Report 11.2024
2. Resolution No. 2025-10 - A Resolution Approving FY26 Non-Union Salary Ranges
3. Resolution No. 2025-10 - Exhibit A - FY26 Non-Union Salary Ranges

Compensation Study

Non-Represented Jobs

City of Windsor Heights, Iowa

November 2024
Pontifex Consulting Group LLC

PONTIFEX
CONSULTING GROUP, LLC

TABLE OF CONTENTS

		Page
I.	Introduction	3
II.	Human Capital Issues and Compensation Philosophy	4
III.	Compensation Analysis	8
IV.	Recommendations	23
Appendix A – Compensation Survey Participants		25
Appendix B – Salary Ranges & Compa-Ration Analysis		27

What was the Pontifex Consulting Group (PCG) asked to do?

The objectives of the study were to:

- Validate the compensation philosophy and its alignment to the City of Windsor Height's (City) strategy and direction.
- Review competitive labor market position of City's non-union jobs.
- Prepare a written report of our findings and comparisons.

This report covers all of these objectives.

II. Human Capital Issues and Compensation Philosophy

To achieve the mission and goals of the City requires the attraction and retention of key talent to fill staff jobs. These are jobs that have a significant depth in technical and scientific competencies, while at the same time possessing advanced skills in project coordination and team building. These unique skills are essential for staff to be successful at carrying out the City's mission in an effective and efficient manner.

Specifically, the City intends to:

- Support the City's efforts to attract key staff talent necessary to meet its core mission.
- Retain key staff and prevent "poaching" from other agencies.
- Maintain a competitive, market-driven compensation and benefits system.
- Maintain a performance-based, results-oriented culture.
- Ensure responsible use of the City's fiscal resources.

The compensation of an organization's staff normally follows an established compensation philosophy and strategy. Such strategic documents are critical towards alignment of the organization's largest budgetary expenditure dedicated to organizational needs and fiscal resources, while providing predictability and stability in budgeting and staffing.

A survey of 2,023 organizations across the United States shows that a majority of respondents have a stated compensation strategy of paying at or above the labor market rate for their jobs:

Employee Group	*Pay Below Market Rate*	*Pay Equal to Market Rate*	*Pay Above Market Rate*	*Other Percentile or No Strategy*
Hourly Employees	2.7%	86.2%	10.1%	1.0%
Salaried Employees	2.1%	85.6%	11.4%	0.9%
Management/Executive Employees	1.9%	78.6%	17.8%	1.7%

SOURCE: World-at-Work (American Compensation Association) 2023/2024 Salary Budget Survey.

The following chart shows the percentage changes in the Consumer Price Index for Urban Consumers (CPI-U) for the Midwestern United States area and the Employment Cost Index (ECI) for wages and salaries between 2014 and 2023 as reported by the Bureau of Labor Statistics of the U.S. Department of Labor:

Year	*CPI-U Midwest USA*	*ECI Public Sector*	*ECI Private Sector*
2014	0.7%	1.6%	2.2%
2015	0.0%	1.8%	2.1%
2016	1.8%	2.1%	2.3%
2017	1.7%	2.1%	2.8%
2018	1.3%	2.4%	3.1%
2019	2.3%	2.5%	3.0%
2020	1.1%	2.5%	3.0%
2021	7.5%	2.7%	5.0%
2022	5.0%	2.7%	5.0%
2023	3.2%	4.7%	4.3%
Average 2014-2023	**2.5%**	**2.5%**	***3.3%***

The Consumer Price Index (CPI) is a measure of the average change over time in the prices paid by urban consumers for a market basket of consumer goods and services.

The Employment Cost Index (ECI) measures the change in the hourly labor cost to employers over time. The ECI uses a fixed "basket" of labor to produce a pure cost change, free from the effects of workers moving between occupations and industries and includes both the cost of wages and salaries (no benefits).

III. Compensation Analysis

Methodology

A majority of the City's jobs only exist in public sector organizations. Therefore, the public sector is one of the City's primary competitors for talent. The City provided PCG with a list of public sector comparable agencies to survey for the purpose of obtaining compensation and benefits data for this sector. The list of respondents can be found in Appendix A.

To maintain data integrity, PCG can only utilize data provided to us through our survey process in order to conduct a professional and objective analysis of the information.

Data reflect market pay levels effective November 2024.

Survey data provide critical competitive salary information; however, compensation of individual positions may differ from the target labor market for many reasons, including stage of organizational growth, organizational performance and the qualifications, specific responsibilities and performance of the individual position incumbents.

Overall responsibilities, specific duties and education and experience requirements from Client job descriptions were referenced to provide accurate matching. Jobs were matched based on content, responsibilities, level and qualifications and not on title alone. For this reason, the titles in the market do not necessarily align with the titles employed by the Client. This also means that there will be cases where there is not an appropriate match to a Client job in the survey database and therefore comparison data will not be available or reported.

Data is reported if there are three (3) or more data points per grouping. If data is not available for the job it will be reported as "N/A".

Market analyses show competitors pay practices at a specific point in time. They do not yield a "single correct rate" of compensation for a specific job. Organizations should not consider survey reports as an answer book. Survey data should be used in context with the organization's compensation philosophy, ability to pay, and the larger economic and business climate.

Salary Range Minimum Rate

The charts on the following pages provide the comparison of City minimum salary range pay rates to the competitive labor market rates. The minimum salary range rate represents the minimum rate of pay that an employer will pay for a job/skill set. This is usually understood to be where the organization would set the pay rate for an incumbent who has the minimal level of education and experience required for a job (attraction rate).

Urban Group

City Job Title	City Minimum Salary Range Rate	Market Average Minimum Salary Range Rate	City as a Percent of Market Average Rate
City Clerk	$64,318	$97,306	-33.9%
Deputy City Clerk	$47,174	$60,398	-21.9%
Finance/Human Resources Director	$86,136	$127,735	-32.6%
City Administrator		$176,187	
Fire Chief		$133,577	
Fire Lieutenant	$62,968	$87,019	-27.6%
Police Chief		$135,812	
Police Lieutenant	$69,097	$103,065	-33.0%
Police Administrative Services Coordinator	$44,212	$52,363	-15.6%
Public Works Director	$84,985	$127,735	-33.5%
Public Works Supervisor	$56,600	$98,162	-42.3%
Public Works Equipment Operator		$63,755	

Exurban Group

City Job Title	City Minimum Salary Range Rate	Market Average Minimum Salary Range Rate	City as a Percent of Market Average Rate
City Clerk	$64,318	$70,485	-8.7%
Deputy City Clerk	$47,174	$46,995	+0.4%
Finance/Human Resources Director	$86,136	$120,067	-28.3%
City Administrator		N/A	
Fire Chief		$109,349	
Fire Lieutenant	$62,968	$90,054	-30.1%
Police Chief		$109,349	
Police Lieutenant	$69,097	$82,636	-16.4%
Police Administrative Services Coordinator	$44,212	N/A	
Public Works Director	$84,985	$106,563	-20.2%
Public Works Supervisor	$56,600	$76,478	-26.0%
Public Works Equipment Operator		N/A	

Rural Group

City Job Title	City Minimum Salary Range Rate	Market Average Minimum Salary Range Rate	City as a Percent of Market Average Rate
City Clerk	$64,318	$76,633	-16.1%
Deputy City Clerk	$47,174	$48,131	-2.0%
Finance/Human Resources Director	$86,136	$84,195	+2.3%
City Administrator		$126,889	
Fire Chief		N/A	
Fire Lieutenant	$62,968	N/A	
Police Chief		$93,809	
Police Lieutenant	$69,097	$83,593	-17.3%
Police Administrative Services Coordinator	$44,212	$46,184	-4.3%
Public Works Director	$84,985	$91,207	-6.8%
Public Works Supervisor	$56,600	$79,042	-28.4%
Public Works Equipment Operator		$53,272	-16.1%

Aggregate (all three groups)

City Job Title	City Minimum Salary Range Rate	Market Average Minimum Salary Range Rate	City as a Percent of Market Average Rate
City Clerk	$64,318	$81,475	-21.1%
Deputy City Clerk	$47,174	$52,179	-9.6%
Finance/Human Resources Director	$86,136	$109,811	-21.6%
City Administrator		$143,089	
Fire Chief		$114,820	
Fire Lieutenant	$62,968	$84,243	-25.3%
Police Chief		$113,321	
Police Lieutenant	$69,097	$90,412	-23.6%
Police Administrative Services Coordinator	$44,212	$48,653	-9.1%
Public Works Director	$84,985	$110,425	-23.0%
Public Works Supervisor	$56,600	$84,874	-33.3%
Public Works Equipment Operator		$55,507	

Salary Range Midpoint Rate

The charts on the following pages provide the comparison of City midpoint salary range pay rates to the competitive labor market rates. The midpoint of the salary range represents the midpoint of the range of pay that an employer will pay for a job/skill set. This is usually understood to be where the organization would set the pay rate for an incumbent who has a journey-level education and experience. From an experience level this is generally understood to be 5-7 years.

Urban Group

City Job Title	City Midpoint Salary Range Rate	Market Average Midpoint Salary Range Rate	City as a Percent of Market Average Rate
City Clerk	$77,182	$114,296	-32.5%
Deputy City Clerk	$56,609	$70,051	-19.2%
Finance/Human Resources Director	$103,363	$149,912	-31.1%
City Administrator		$204,886	
Fire Chief		$155,928	
Fire Lieutenant	$75,562	$101,101	-25.3%
Police Chief		$158,573	
Police Lieutenant	$82,917	$120,356	-31.1%
Police Administrative Services Coordinator	$53,054	$60,695	-12.6%
Public Works Director	$101,982	$149,912	-32.0%
Public Works Supervisor	$67,920	$114,443	-40.7%
Public Works Equipment Operator		$70,738	

Exurban Group

City Job Title	City Midpoint Salary Range Rate	Market Average Midpoint Salary Range Rate	City as a Percent of Market Average Rate
City Clerk	$77,182	$86,816	-11.1%
Deputy City Clerk	$56,609	$56,549	+0.1%
Finance/Human Resources Director	$103,363	$142,678	-27.6%
City Administrator		N/A	
Fire Chief		$134,107	
Fire Lieutenant	$75,562	$105,425	-28.3%
Police Chief		$134,107	
Police Lieutenant	$82,917	$101,884	-18.6%
Police Administrative Services Coordinator	$53,054	N/A	
Public Works Director	$101,982	$130,972	-22.1%
Public Works Supervisor	$67,920	$96,100	-29.3%
Public Works Equipment Operator		N/A	

Rural Group

City Job Title	City Midpoint Salary Range Rate	Market Average Midpoint Salary Range Rate	City as a Percent of Market Average Rate
City Clerk	$77,182	$87,031	-11.3%
Deputy City Clerk	$56,609	$56,222	+0.7%
Finance/Human Resources Director	$103,363	$96,328	+7.3%
City Administrator		$143,415	
Fire Chief		N/A	
Fire Lieutenant	$75,562	N/A	
Police Chief		$105,085	
Police Lieutenant	$82,917	$98,300	-15.6%
Police Administrative Services Coordinator	$53,054	$53,786	-1.4%
Public Works Director	$101,982	$105,333	-3.2%
Public Works Supervisor	$67,920	$93,096	-27.0%
Public Works Equipment Operator		$60,507	

Aggregate (all three groups)

City Job Title	City Midpoint Salary Range Rate	Market Average Midpoint Salary Range Rate	City as a Percent of Market Average Rate
City Clerk	$77,182	$96,048	-19.6%
Deputy City Clerk	$56,609	$61,370	-7.8%
Finance/Human Resources Director	$103,363	$128,454	-19.5%
City Administrator		$168,129	
Fire Chief		$135,917	
Fire Lieutenant	$75,562	$98,847	-23.6%
Police Chief		$132,450	
Police Lieutenant	$82,917	$107,298	-22.7%
Police Administrative Services Coordinator	$53,054	$56,615	-6.3%
Public Works Director	$101,982	$130,856	-22.1%
Public Works Supervisor	$67,920	$101,480	-33.1%
Public Works Equipment Operator		$63,657	

Salary Range Maximum Rate

The charts on the following pages provide the comparison of City maximum salary range pay rates to the competitive labor market rates. The maximum salary range rate represents the maximum rate of pay that an employer will pay for a job/skill set. This is usually understood to be where the organization would set the pay rate for an incumbent who has an above average level of education and experience (retention rate).

Urban Group

City Job Title	City Maximum Salary Range Rate	Market Average Maximum Salary Range Rate	City as a Percent of Market Average Rate
City Clerk	$90,045	$131,287	-31.4%
Deputy City Clerk	$66,044	$79,705	-17.1%
Finance/Human Resources Director	$120,590	$172,090	-29.9%
City Administrator		$233,586	
Fire Chief		$178,279	
Fire Lieutenant	$88,155	$115,183	-23.5%
Police Chief		$181,335	
Police Lieutenant	$96,736	$137,647	-29.7%
Police Administrative Services Coordinator	$61,896	$69,028	-10.3%
Public Works Director	$113,747	$172,090	-33.9%
Public Works Supervisor	$79,240	$130,725	-39.4%
Public Works Equipment Operator		$77,721	

Exurban Group

City Job Title	City Maximum Salary Range Rate	Market Average Maximum Salary Range Rate	City as a Percent of Market Average Rate
City Clerk	$90,045	$103,147	-12.7%
Deputy City Clerk	$66,044	$66,104	-0.1%
Finance/Human Resources Director	$120,590	$165,290	-27.0%
City Administrator		N/A	
Fire Chief		$158,866	
Fire Lieutenant	$88,155	$120,796	-27.0%
Police Chief		$158,866	
Police Lieutenant	$96,736	$121,132	-20.1%
Police Administrative Services Coordinator	$61,896	N/A	
Public Works Director	$113,747	$155,382	-26.8%
Public Works Supervisor	$79,240	$115,723	-31.5%
Public Works Equipment Operator		N/A	

Rural Group

City Job Title	City Maximum Salary Range Rate	Market Average Maximum Salary Range Rate	City as a Percent of Market Average Rate
City Clerk	$90,045	$97,430	-7.6%
Deputy City Clerk	$66,044	$64,314	+2.7%
Finance/Human Resources Director	$120,590	$108,461	+11.2%
City Administrator		$159,940	
Fire Chief		N/A	
Fire Lieutenant	$88,155	N/A	
Police Chief		$116,360	
Police Lieutenant	$96,736	$113,008	-14.4%
Police Administrative Services Coordinator	$61,896	$61,387	+0.8%
Public Works Director	$113,747	$119,459	-4.8%
Public Works Supervisor	$79,240	$107,150	-26.0%
Public Works Equipment Operator		$67,741	

Aggregate (all three groups)

City Job Title	City Maximum Salary Range Rate	Market Average Maximum Salary Range Rate	City as a Percent of Market Average Rate
City Clerk	$90,045	$110,621	-18.6%
Deputy City Clerk	$66,044	$70,561	-6.4%
Finance/Human Resources Director	$120,590	$147,097	-18.0%
City Administrator		$193,168	
Fire Chief		$157,014	
Fire Lieutenant	$88,155	$113,450	-22.3%
Police Chief		$151,580	
Police Lieutenant	$96,736	$124,183	-22.1%
Police Administrative Services Coordinator	$61,896	$64,577	-4.2%
Public Works Director	$113,747	$151,288	-24.8%
Public Works Supervisor	$79,240	$118,085	-32.9%
Public Works Equipment Operator		$71,807	

City as a Percent of Labor Market			
Market Group	Minimum Rate	Midpoint Rate	Maximum Rate
Urban	-30.0%	-28.0%	-26.9%
Exurban	-18.5%	-19.6%	-20.8%
Rural	-10.4%	-7.2%	-5.4%
Aggregate	-20.8%	-19.3%	-18.7%

IV. Recommendations

As an aggregate, the City's salary ranges are below competitive labor market rates at the minimum, midpoint and maximum levels. PCG would recommend using the Aggregate Group midpoint rates to construct updated salary ranges for the non-represented jobs. The range recommendations are included in Appendix B of this report.

NOTE: Due fact that the scope of operations is lower in the City's Public Works Department in relation to market competitors (lack of utilities), the market midpoint rates have been discounted by 10%. The City Administrator is also discounted by 10% to reflect a lesser scope in departments than other comparables.

Incumbent Employee Compensation

Current City non-represented staff have a very limited tenure. Therefore, care should be taken in determining their proper positioning within the salary ranges (and in relation to the labor market rates). PCG has provided a compa-ratio analysis to assist the City in determining whether adjustments are to be considered in Appendix B of this report.

Compa-ratio is calculated by dividing the employee's salary by the salary range midpoint.

System Maintenance

The market positioning of the City's jobs should be reviewed at a minimum every two (2) to three (3) years. This will provide needed data necessary for use in calculating adjustments to the wage structure based upon labor market movement.

New jobs should be benched to the market to provide relevant salary data that will assist in recruitment and retention. It will also be of importance in the maintenance of the compensation system.

Appendix A

Compensation Survey Participants

There are a variety of factors to consider when identifying the competitive labor market for attraction and retention. Factors to consider include industry, organization size (population served, number of employees, and/or revenue budget), geographic location or proximity, and competitors for talent.

Urban Group

- Clive
- Evansdale
- Johnston
- Pleasant Hill
- Urbandale

Exurban Group

- Adel
- Bondurant
- Boone
- Indianola
- Norwalk
- Polk City

Rural Group

- Newton
- Nevada
- Pella
- Spencer
- Waverly
- Webster

Appendix B

Salary Ranges & Compa-Ratio Analysis

Salary Range Recommendations

City Job Title	Salary Range		
	Minimum Rate	Midpoint Rate	Maximum Rate
City Clerk	$80,040	$96,048	$115,258
Deputy City Clerk	$51,142	$61,370	$73,644
Finance/Human Resources Director	$107,045	$128,454	$154,145
City Administrator	$126,097	$151,316	$181,579
Fire Chief	$113,264	$135,917	$163,100
Fire Lieutenant	$82,373	$98,847	$118,616
Police Chief	$110,375	$132,450	$158,940
Police Lieutenant	$89,415	$107,298	$128,758
Police Administrative Services Coordinator	$47,179	$56,615	$67,938
Public Works Director	$98,142	$117,770	$141,324
Public Works Supervisor	$76,110	$91,332	$109,598
Public Works Equipment Operator	$53,048	$63,657	$76,388

Compa-Ratio Analysis

City Job Title	Employee Tenure	Employee Salary	Compa-Ratio
City Clerk	1.5 years	$78,110	-18.7%
Deputy City Clerk	1 year	$59,212	-3.5%
Finance/Human Resources Director	6 years	$115,000	-10.5%
City Administrator	1 year	$140,400	-7.2%
Fire Chief	1.5 years	$121,325	-10.7%
Fire Lieutenant			
Police Chief	1.5 years	$133,350	0.7%
Police Lieutenant	1 year	$102,540	-4.4%
Police Administrative Services Coordinator	10+ years	$67,607	+19.4%
Public Works Director	2 months	$95,300	-19.1%
Public Works Supervisor	2 months	$86,000	-5.8%
Public Works Equipment Operator			

Compa-Ratio General Guidelines	Pay Target Ratio				
	<90%	90-95%	Target 95-105%	105-110%	>110%
Years Experience at Job Level	0-3	3-5	5-7	7-10	10+

Resolution No. 2025-10

A RESOLUTION APPROVING FY26 NON-UNION SALARY RANGES

WHEREAS, the City of Windsor Heights (the “City") hired an outside consulting firm, Pontifex, to conduct a salary survey to help achieve a competitive salary structure, and;

WHEREAS, Pontifex prepared the FY26 Non-Union Salary Range matrix assigning job classifications into min, mid, and max ranges for non-union employees [exhibit A], and;

WHEREAS, the City Clerk position and Finance/HR Director were identified to need immediate adjustments to stay competitive, and;

WHEREAS, the Personnel and Finance Committee has reviewed the report and Administration’s recommendations and recommends adopting the attached Salary Ranges which will be utilized to determine appropriate compensation.

NOW THEREFORE, BE IT RESOLVED, by the City Council of the City of Windsor Heights State of Iowa, approves the following:

1. FY26 Non-Union Salary Range
2. City Clerk Salary Adjustment: A current fiscal year $3,500 salary increase is recommended to meet the position’s minimum threshold effective January 25, 2025
3. Finance/HR Director Salary Adjustment: A current fiscal year increase of $5,000 and a non-COLA increase of $5,000 at the start of next fiscal year to reflect the incumbent’s experience and performance relative to the salary study mid-point effective January 25, 2025

Passed and Approved this 23rd day of January, 2025

_____
Mike Jones, Mayor

Attest:_____
Adam Strait, City Clerk

City of Windsor Heights FY26 Salary Ranges			
Position	**Minimum**	**Midpoint**	**Maximum**
City Clerk	$ 81,475	$ 96,048	$ 110,621
Finance Director	$ 109,811	$ 128,454	$ 147,097
Deputy City Clerk	$ 52,179	$ 61,370	$ 70,561
Public Works Director	$ 99,382	$ 117,770	$ 136,159
Public Works Supervisor	$ 76,386	$ 91,332	$ 106,276
Public Works Equipment Operator	$ 55,507	$ 63,657	$ 71,807
Fire Chief	$ 114,820	$ 135,917	$ 157,014
Fire Lt.	$ 84,243	$ 98,847	$ 113,450
Police Chief	$ 113,321	$ 132,450	$ 151,580
Police Lt.	$ 90,412	$ 107,298	$ 124,183
Police Admin Services Coordinator	$ 48,653	$ 56,615	$ 68,500

STAFF REPORT
CITY COUNCIL
January 23, 2025

TO: CITY COUNCIL

FROM: Adam Plagge, City Administrator

SUBJECT: Discuss the Capital Improvement Plan (CIP)

GENERAL INFORMATION

Attached is the draft Capital Improvements Program (CIP). The Public Works and Finance Committee have reviewed the draft CIP and recommendations have been incorporated into the attached draft.

Specific changes and/or areas for feedback are highlighted in yellow and include:

1. Colby Park Improvements
    1. Staff recommendation is to prioritize the storm sewer improvements under the potential future tennis courts. Thereafter complete the parking lot resurfacing and then proceed with construction of the tennis courts or fitness circuit, as TIF funding allows.
    2. The Water Access is to be constructed in 2025-2026 due to grant requirements.
2. Addition of and timing of the 65th storm sewer project to CIP, proposed for 2027 per Committee feedback.
3. Discuss proposed 2025 Forest Court Mill and Overlay. Recommended to proceed per Committee feedback.
4. Discuss Public Art Investments and potential external funding sources.
5. Public Safety Building Discussion

The next five years of the draft CIP projects are anticipated to be fully funded based on existing and planned bonds and projected revenues. Reconstruction of 73rd St. south and whether additional grants are received, remains the pivotal question for timing of projects beyond five years.

Staff will integrate any recommended changes from this meeting for further discussion on the CIP at the February 3rd City Council meeting prior to the March 3rd public hearing on the CIP.

ATTACHMENTS

1. Forest Court Overlay Staff Report
2. DRAFT FY2026 CIP12-31-24

Staff Report

To: Mayor and City Council
From: Adam Plagge, Justin Ernst & Andy Larson
Date: November 20, 2024
Subject: Forest Ct. Overlay

GENERAL INFORMATION

Key Issues

1. **Forest Court Overlay**
    - **Planned Work**: 2025 2-inch overlay for 1,000 feet between 64th and 66th Streets at an estimated cost of $650,000.
    - **Concerns**: Poor subsurface conditions have been identified that could shorten the overlay's lifespan despite proper maintenance.
    - **Alternative**: Full reconstruction, including sidewalk installation, estimated at $1.6 million—a significant budget increase.
2. **Alternative Projects**
    - **Plaza Circle**:
        - **Scope**: 430-foot resurfacing with potential hammerhead lengthening for fire code compliance.
        - **Cost**: Estimated at $700,000.
        - **Challenges**: Limited benefit due to low utilization (serves six households).
    - **Timmons Drive**:
        - **Scope**: 470-foot reconstruction, including sidewalk installation.
        - **Cost**: Base reconstruction at $880,000, with potential watermain replacement adding between $300,000–$500,000. Further analysis would be necessary to determine the best course of action on the watermain.
        - **Challenges**: Narrow right-of-way (40 feet) and possible timeline extension or cost increases due to watermain considerations. The watermain was installed in 1964 which is within the postwar period that pipe had thinner walls and is more susceptible to breaks. Three breaks have occurred since 2005.
        - **Benefit**: Higher traffic volume justifies the investment compared to Plaza Circle.
3. **Budget Constraints**
    - A full reconstruction of Forest Court or Timmons Drive could delay other projects in the CIP.

Staff Recommendations

Proceed with Forest Court Overlay:

- Practical and affordable for the 2025–2026 timeline.
- Recognizes the overlay's limited lifespan but offers an interim improvement.
- Public Works Committee has indicated support for proceeding with the overlay

---

Next Steps

- Seek City Council input on project prioritization.
- Balance the immediate need for improvements with budgetary constraints and long-term infrastructure goals.
- If supported, this the overlay project will proceed to go out for bid this winter for work to occur CY 2025.

DRAFT WINDSOR HEIGHTS 10 YEAR CIP (FY26-36)

Project Type	Project Name	PCI Rating	Project Description	Project Reasoning	Planned Construction Year (FY) Projects may start/end on adjoining Fiscal Year	Funding Source Estimates						Sewer	Total Estimated Cost	External Funding Sources	Source/Date Information
						Stormwater Funding Source	Storm Water	Water Funding Source	Water	City (GF, TIF, RUT)	Funding Source				
Reconstruction	68th St. South & Mott	38	School St to University Ave. Storm sewer installation, sanitary spot repairs, pedestrian connection to School St and Colby Park.	DMWW priority due to main breaks and need to upsize watermain. Need sidewalk to Colby Park. Poor Pavement Conditions as noted on the PCI. Incorporate recommendations of the Stormwater Management Plan -> portions of Figure #12.	2024-2025	Stormwater/TIF	$407,571	DMWW/TIF	$420,300	$2,872,129	2024 Bond (Debt Levy)		$3,700,000		Excel Tab 2023
Reconstruction	74th Street	40	74th St Wishire to College. Full depth removal and replacement of the road, replacement of significant storm sewer and subdrains, sanitary sewer spot repairs.	DMWW high priority due to main breaks and need to update main size. Several intakes in need of reconstruciton causing undermining to road. Overlay insufficient.	2025 (storm sewer) 2026 (road reconstruction)	Stormwater	$630,400	DMWW	$284,700	$2,684,900	Cash/LOSST/2024 Bond		$3,600,000		Excel Tab 2024
Reconstruction	67th Street	33	School St to University Ave. Storm sewer installation, sanitary spot repairs, pedestrian connection to School St and Colby Park.	DMWW upgrade main from 6" to 8". Poor Pavement Conditions as noted on the PCI. Incorporate recommendations of the Stormwater Management Plan -> portions of Figure #12.	2028	Stormwater	$452,000	DMWW	$420,300	$2,927,700	Cash/LOSST		$3,800,000		Excel Tab 2024
Reconstruction	64th Street - (Forest Ct. to Sunset)	30.5-43	Forest Ct. to Sunset Includes sanitary sewer spot repairs, installation of storm sewer and connections into nearest available structures, and water main replacement.	Poor pavement conditions, lack of storm sewer, resident and council request. Project may be broken up into phases and shall be coordinated with school schedule.	2029	Stormwater	$307,100	DMWW	$227,200	$1,865,700	2029 Bond		$2,400,000		Excel Tab 2024
Reconstruction	76th Street and Marilyn Drive.	44	76th St. and Marilyn from College to City Limits. Includes sanitary sewer spot repairs, watermain replcament and replacement of storm water and sub drains.	Poor pavement conditions as noted on the PCI. Several intakes on flat spots in need or rebuilding that have caused undermining to road.	2030	Stormwater	$354,500	DMWW	$381,800	$2,963,700	2029 Bond		$3,700,000		Excel Tab 2024
Reconstruction	Washington Ave. 70th-73rd St.	31	Reconstruction of Washington Ave between 73rd and 70th. Installation of sidewalk and storm sewer to 70th.	Poor pavement conditions noted in PCI.	2033	Stormwater	$275,900	DMWW	$266,900	$2,257,200	TBD		$2,800,000		Excel Tab 2023
Reconstruction	Carpenter Avenue	44	64th Street to 65th Street. Full depth removal and replacement of the road, installation of some storm sewer and subdrains, sanitary sewer spot repairs.	Pavement conditions as noted on the PCI, shorter section of street that may be able to get completed sooner as funding allows. If paired with Elmcrest Ave, may get more favorable bids.	2034	Stormwater	$117,214	DMWW	$16,068	$863,629	TBD		$1,200,000		Excel Tab 2020
Reconstruction	73rd Street - (South of University)	17-23	University to Center Street. Includes potential reallignment of 73rd St to accommodate pedestrian facilities between Buffalo Road and Center Street, storm sewer improvements, sanitary sewer point repairs. Grant Dependent Signalization Upgrades and potential Ped. Bridge	Poor Pavement Conditions as noted on the PCI. Improve walkability through the corridor. Signal upgrades.	Unscheduled (2030-2031)	Stormwater/RAISE/TIF	$1,978,630	DMWW	$0	$16,321,370	Future Bond (TIF)		$19,000,000	STBG: 2024$700,000 STBG 2025 applied. 2025 RAISE Applied	Excel Tab 2020

Reconstruction	Elmcrest Dr - (64th-65th)	42	64th Street to 65th Street. Full depth removal and replacement of the road, installation of some storm sewer and subdrains, sanitary sewer spot repairs.	Pavement conditions as noted on the PCI, shorter section of street that may be able to get completed sooner as funding allows. If paired with Carpenter Ave, may get more favorable bids.	Unscheduled	Stormwater	$117,214	DMWW	$16,068	$863,629	TBD		$1,200,000		Excel Tab 2020
	Elmcrest Dr - (66th-68th)	45	66th St to 68th St. Full depth removal and replacement of the road, installation of some storm sewer and subdrains, sanitary sewer spot repairs.	Pavement conditions as noted on the PCI, shorter section of street that may be able to get completed sooner as funding allows.	Unscheduled	Stormwater	$62,521	DMWW	$10,712	$971,547	TBD		$1,200,000		Excel Tab 2020
	Elmcrest Dr - (66th to dead-end)	41	66th Street east to the dead end. Full depth removal and replacement of the road and sanitary sewer spot repairs.		Unscheduled	Stormwater	$15,600	DMWW	$16,068	$620,678	TBD		$700,000		Excel Tab 2020
	Timmons Ave	32	66th St to 68th St		Unscheduled	Stormwater	$60,000	DMWW	$95,500	$724,500	TBD		$880,000		Excel Tab 2024
	64th St. - (College to Sunset)	43	College Ave to Sunset		Unscheduled	Stormwater	$40,000	DMWW	$250,000		TBD		$2,000,000		
	64th St. (South of University)	39	South of University to Lamar Place	Pavement conditions as noted on the PCI, creation of storm water connectino from The Windsor.	Unscheduled	Stormwater	$550,000	DMWW	$500,000	$3,170,000	TBD		$4,220,000		Excel Tab 2024
	79th St.	45	79th St Between College Drive and Marilyn Drive		Unscheduled	Stormwater	$217,300	DMWW	$221,700	$1,751,000	TBD		$2,190,000		Excel Tab 2024

Project Type	Project Name		Project Description	Project Reasoning	Planned Construction Year (FY) Projects may start before or be completed after noted Fiscal Year	Stormwater Funding Source	Storm Water	Water Funding Source	Water	City (GF, TIF, RUT)	Funding Source		Total Estimated Cost	External Funding Sources	Source Information
Overlays / Mill & Overlay	Forest Court Mill and Overlay (64th to 66th)		From 64th St to 66th St. Mill off the existing road surface and overlay with a 2" asphalt cap. Full depth patches would be completed as needed.	Pavement conditions as noted on the PCI, shorter section of street that may be able to get completed sooner as funding allows. Roads be rerevaluated for full reconstruction as construction date approaches.	2025-2026					$650,000	RUT/LOST		$650,000		
	Mott Ave Mill and Overlay (64th to 65th)		64th to 65th Street. Mill off the existing road surface and overlay with a 2" asphalt cap. Full depth patches would be completed as needed.		2028					$250,000	RUT/LOST		$250,000		
	77th St. (Marilyn to College)		77th Street from Marilyn Drive to College Drive. Mill and overlay the roadway.		2028					$650,000	RUT/LOST		$650,000		
	Luin Lane		Entirety of Luin Lane between both ends of College Drive. Mill and overlay the roadway.		2034					$400,000	RUT/LOST		$250,000		
	75th St. (Wilshire to College)		75th St from Wilshire Blvd to College Drive. Mill and overlay the roadway.		2036					$288,400	RUT/LOST		$288,400		
	Colby Ave Mill and Overlay (70th to 73rd)		70th to 73rd St. Mill off the existing road surface and overlay with a 2" asphalt cap. Full depth patches would be completed as needed.		Unscheduled					$741,600	RUT/LOST		$741,600		
	Plaza Circle Full Depth Asphalt		Plaza Circle south of College Drive to the dead end. Reconstruction		Unscheduled					$700,000	RUT/LOST		$700,000		Excel Tab 2024
	Plaza Hills Overlays - Phase 7+		78th St, 79th St, and 80th St between College Drive and Marilyn Drive. 80th Circle north of College Drive. Mill and overlay the roadway. 78th St and 79th St do not require milling, just overlay.		Unscheduled					$1,545,000	RUT/LOST		$1,545,000		
Pavement Preservation	Residential Street Cracksealing		Cracksealing of ashpalt residential roads		Ongoing					TBD	RUT				
	University Ave Sealing		Sealing along asphalted portions of University Ave to extend life of road		2025					$120,000	TIF		$120,000		
	University Ave Striping		Pavement striping within corporate limits		2025					$120,000	TIF		$120,000		
	Wilshire Blvd		PCC patching and reconstruction. Primary focus immediately west of 70th St. and immediately west of 73rd.		2027					$250,000	RUT/LOST		$250,000		
	Colby Ave (66th to 68th)		66th St to 68th St.Mill out half the depth of existing pavement at failed joints and replace. Similar to work done on 70th Street south of Hickman in 2018.		2027					$123,600	RUT/LOST		$123,600		
	66th Street (Forest to Del Matro)		Joint sealing of 66th Street from Forest Court to Del Matro.		2027					$61,800	RUT/LOST		$61,800		
	70th St. PCC Patching		Misc PCC Patching		2028					$500,000	RUT/LOST		$500,000		
	70th St.Crack Sealing		Crack sealing along entire duration of 70th St.		2029					$80,000	RUT/LOST		$80,000		

	Project Name		Project Description	Project Reasoning	Planned Construction Year (FY) Projects may start before or be completed after noted Fiscal Year	Stormwater Funding Source	Storm Water	Water Funding Source	Water	City (GF, TIF, RUT)	Funding Source		Total Estimated Cost	External Funding Sources	Source Information
Storm Water Projects	Wilshire Blvd Storm Sewer		Replace the storm sewer on private property between Wilshire and Sunrise. Abandon the pipe on private property and install new sewer on Wilshire to connect to 73rd St.	Stormwater Management Plan	2026	Stormwater Fund	$150,000						$150,000		https://www.windsorheights.org/345/Stormwater-Management
	Storm Sewer Televising		Televise final section of City storm sewer	System maintenance	2026	Stormwater Fund	$50,000						$50,000		
	Colby Park Storm Sewer		Installation of storm sewer from School Street to the creek.	Must be completed prior to pickleball phase. Stormwater Management Plan, Figure #11	2027	Stormwater Fund/TIF	$430,000						$430,000		
	65th St. Storm sewer addition		Connection from The Windsor storm retention basin, 65th St. and Public Safety Building storm sewer	Provide stormsewer connections on 65th St. and connection to The Windsor overflow	2027	Stormwater Fund	$670,000						$670,000		
	Washington Ave, 70th St, and Northwest Drive Storm Sewer Improvements		Installation of storm sewer along Northwest Drive, 69th St, Washington Ave, and 70th Street in order to increase carrying capacity. Can be split into two phases as needed.	Stormwater Management Plan, Figure #2	2032	Stormwater Fund	$1,500,000						$1,500,000		
	Colby Avenue and Forest Court Storm Sewer Improvements		Increase size and install new storm sewer on Forest Ct from 68th St to 73rd St. Install storm sewer at the intersection of 70th St. and Colby Ave.	Stormwater Management Plan, Figure #11	2034	Stormwater Fund	$1,650,000						$1,650,000		
Streambank Stabilization	North Walnut Creek Streambank Stabilization - Project 1		Protecting storm sewer outfall adjacent to trail west of 1816 75th St. Incorpated in 74th St. project.	Protect public infrastructure and private structures that are at risk of being damaged by continued erosion of the streambank on North Walnut Creek.	2025-2026	Stormwater Fund	$150,000				74th St. Project Expense		$150,000		https://windsorheights.org/DocumentCenter/View/1906/Final-Report---North-Walnut-Creek-Stabilization-Study?bidId=
	North Walnut Creek Streambank Stabilization - Project 2		Protect storm sewer and sanitary serwer infrastructure encroaching into creek bank through addition of rip rap.		2029	Stormwater/Sewer Fund	$100,000						$100,000		
	North Walnut Creek Streambank Stabilization - Phase 3		Protect public infrastructure and private structures that are at risk of being damaged by continued erosion of the streambank on North Walnut Creek.		Unscheduled	Stormwater Fund	$500,000						$500,000		
	North Walnut Creek Streambank Stabilization - Phase 4				Unscheduled	Stormwater Fund	$500,000						$500,000		
Flood Reduction	Property buy-outs		Possible result of the flood resliency study		Unscheduled					TBD			$4,635,000	Federal monies not currently available	https://www.windsorheights.org/813/Flood-Information
	Levee construction				Unscheduled					TBD			$6,798,000		
	Creek channel clear and grub				Unscheduled					TBD			$11,330,000		

	Project Name		Project Description	Project Reasoning	Planned Construction Year (FY) Projects may start before or be completed after noted Fiscal Year	Stormwater Funding Source	Storm Water	Water Funding Source	Water	City (GF, TIF, RUT)	Funding Source		Total Estimated Cost	External Funding Sources	Source Information
Park and Trails	Water Trails Access Point in Colby Park		Construct an interactive and immersive feature along Walnut Creek in Colby Park as part of the Greater Des Moines Water Trails projects.	Park Master Plan	2025-2026					$150,000	TIF		$175,000	$125,000 Grant Awarded	
	Public Art Installation 1		TBD	TBD On Public Art Plan.	2026					TBD	TBD		$30,000		
	63rd St. Sign and Barrier		City Signage and stone barrier along 63rd St. immediately north of I235	Safety & Signage	2026					$65,000	TIF		$65,000		
	Trail Reconstruction adjacent to Colby Park		Replace 2,500' of deteriorated asphalt trail with concrete trail to WalMart Parking lot. Areas north of these will be impacted and replaced by WRA project.	Grant Opportunity	Subject to Grant					$110,000	TIF		$220,000	Grant Applied For	
	Parking Parking Lot		Grind and resurface Colby Park parking lot & restore bioswale	Necessary maintenance	2028	Stormwater Fund	$25,000			$425,000	TIF		$450,000		Excel tab 2024
	Public Art Installation 2		TBD	TBD On Public Art Plan.	2029					TBD	TBD		$30,000		
	Park Tennis Court Phase		Includes the following: Construct new tennis and pickleball courts.	Park Master Plan	2031-32 (Timeline subject to RAISE Grant)					$1,500,000	TIF		$1,500,000		
	North of CEC & Fitness Circuit Park Plan		Includes the following: Add north amenity event space; Install landscape improvements; Construct fitness circuit and install equipment.	Park Master Plan	Unscheduled					$800,000	TIF		$800,000		
	Sherwood Forest Path Connection		Replacement of grass path to Sherwood Forest.	Subject to Development Agreement on Sherwood Forest	Unscheduled					$108,000	GF		$108,000		
	Community Garden		Install a community garden.	Council Input	Unscheduled					TBD	GF		$20,000		
	Lion's Park Refresh and Reconfigure		Public Works proposing minor improvements 2024-2025	Park Master Plan	Unscheduled					TBD	GF		TBD		
	Trail Connection over Walnut Creek south of I-235		Connect the trail systems between WDM, DSM, and Windsor Heights. This is currently in the feasiblity study stage.	Park Master Plan	Unscheduled					TBD	TIF		TBD	Included in RAISE Grant Application	
	Trail Reconstruction Phase 1		I-235 to Center St.	Necessary maintenance	Unscheduled					TBD	GF		$450,000	TAP Grant Applied For	Excel Tab 2024
	Trail Reconstruction Phase 2		TBD	Necessary maintenance	Unscheduled					TBD	GF		TBD		
Facilities	Public Safety Remodel		Repurpose under utilized space and undertake necessary maintenance of existing facilities.	Repurpose under utilized space to accommodate gendered spaces, sleeping quarters and office needs. Replace aging roof and hvac sysyem. Enhance staff safety and improve better employee retention.	Unscheduled					TBD	TBD		In excess of $1000000		Space Use Analysis

STAFF REPORT
CITY COUNCIL
January 23, 2025

TO: CITY COUNCIL

FROM:

SUBJECT: Mayor, Council Reports and Committee Updates, and Administration Reports

GENERAL INFORMATION

ATTACHMENTS
None

STAFF REPORT
CITY COUNCIL
January 23, 2025

TO: CITY COUNCIL

FROM: Adam Plagge, City Administrator

SUBJECT: Equipment Revolving Program (ERP) Draft

GENERAL INFORMATION

The Draft Equipment Revolving Program (ERP) is attached for City Council reference. The ERP is currently in the process of being presented to appropriate Committees for feedback. In the interim, if any questions arise regarding the draft, please contact the City Administrator or appropriate department head. The ERP will be presented in detail by department heads to City Council at the February 3rd meeting and considered for City Council approval March 3rd meeting.

ATTACHMENTS

1. ERP Updated 1.23.25 FY26 DRAFT

Police

Updated 1/23/2025

			Budgeted	Actual	Running
					$135,530.70
Revenues		**2023-24**			
	Transfer In	$75,000			$210,530.70
Expenses					
Auto Equipment	Patrol Marked Vehicle		$78,000	$63,577.94	$146,952.76
Revenues		**2024-25**			
	Transfer In	$75,000			$221,952.76
Expenses					
Auto Equipment	Hybrid Invest Unmarked Vehicle		$60,000	$48,600.00	$173,352.76
Revenues		**2025-26**			
	Transfer In	$85,000			$258,352.76
Expenses					
Auto Equipment	Hybrid Unmarked Fleet Vehicle		$65,000	$65,000.00	$193,352.76
Other Capital Equipment	Laptop replacement (2) for mobile use		$15,000	$15,000.00	$178,352.76
Revenues		**2026-27**			
	Transfer In	$85,000			$263,352.76
Expenses					
Auto Equipment	Hybrid Unmarked Fleet Vehicle		$70,000	$70,000.00	$193,352.76
Other Capital Equipment	Safety/Tactical Helmet Replacement		$10,000	$10,000.00	$183,352.76
Revenues		**2027-28**			
	Transfer In	$100,000			$283,352.76
Expenses					
Auto Equipment	Hybrid Patrol Fleet Vehicle		$87,000	$87,000.00	$196,352.76
Other Capital Equipment	PSB Backup Generator		$60,000	$60,000.00	$136,352.76
Revenues		**2028-29**			
	Transfer In	$115,000			$251,352.76
Expenses					
Auto Equipment	Hybrid Patrol Fleet Vehicle		$87,000	$87,000.00	$164,352.76
Other Capital Equipment	In Car & Body Camera System Upgrade		$100,000	$100,000.00	$64,352.76
Revenues		**2029-30**			
	Transfer In	$125,000			$189,352.76
Expenses					
Auto Equipment	Hybrid Patrol Fleet Vehicle		$87,000	$87,000.00	$102,352.76
Other Capital Equipment	Duty Weapon Replacement		$15,000	$15,000.00	$87,352.76
Revenues		**2030-31**			
	Transfer In	$85,000			$172,352.76
Expenses					
Auto Equipment	Hybrid Patrol Fleet Vehicle		$87,000	$87,000.00	$85,352.76
					$85,352.76
Revenues		**2031-32**			
	Transfer In	$85,000			$170,352.76
Expenses					
Auto Equipment	Hybrid Patrol Fleet Vehicle		$87,000	$87,000.00	$83,352.76
Other Capital Equipment					$83,352.76

Fire and EMS

			Budgeted	Actual	Running
					$1,251,871.54
Revenues		**2023-24**			
	Transfer In	$75,000			$1,326,871.54
Expenses					
Auto Equipment	Pierce Fire Engine		$700,000	$705,733.00	$621,138.54
Other Capital Equipment	Turnout Gear (2)		$6,000	$6,950.00	$614,188.54
	Ballistic PPE		$7,000	$7,200.00	$606,988.54
Revenues		**2024-25**			
	Transfer In	$75,000			$681,988.54
Expenses					
Other Capital Equipment	Turnout Gear (2)		$7,500	$7,500.00	$674,488.54
Revenues		**2025-26**			
	Transfer In	Proceeds from 2 Engines	$100,000		$774,488.54
Expenses					
Auto Equipment	2012 Ford Wheeled Coach Ambulance		$400,000	$400,000.00	$374,488.54
Other Capital Equipment	Turnout Gear (2)		$7,750	$7,750.00	$366,738.54
	Fire Hose		$3,000	$3,000.00	$363,738.54
	Mobile Data Terminal (2)		$15,000	$15,000.00	$348,738.54
Revenues		**2026-27**			
	Transfer In	$75,000			$423,738.54
Expenses					
Auto Equipment	2014 Chevy Tahoe – Paramedic SUV		$75,000	$75,000.00	$348,738.54
Other Capital Equipment	Turnout Gear (2)		$7,750	$7,750.00	$340,988.54
Revenues		**2027-28**			
	Transfer In	$75,000			$415,988.54
Expenses					
Auto Equipment	Shared Resource Ambulance Deposit		$85,000	$85,000.00	$330,988.54
Other Capital Equipment	Turnout Gear (2)		$8,000	$8,000.00	$322,988.54
	Fire Hose		$3,100	$3,100.00	$319,888.54
Revenues		**2028-29**			
	Transfer In	$80,000			$399,888.54
Expenses					
Auto Equipment	Shared Resource Ambulance Balance		$340,000	$340,000.00	$59,888.54
Other Capital Equipment	Turnout Gear (2)		$8,000	$8,000.00	$51,888.54
	Mobile Date Terminal		$7,500	$7,500.00	$44,388.54
Revenues		**2029-30**			
	Transfer In	$50,000			$94,388.54
Expenses					
Auto Equipment	Fire Hose		$3,200	$3,200.00	$91,188.54
Other Capital Equipment	Turnout Gear (2)		$8,000	$8,000.00	$83,188.54
Revenues		**2030-31**			
	Transfer In	$50,000			$133,188.54
Expenses					
Auto Equipment	2019 Ford Expedition		$75,000	$75,000.00	$58,188.54
Other Capital Equipment	Turnout Gear (2)		$8,000	$8,000.00	$50,188.54
	Mobile Data Terminal		$7,500	$7,500.00	$42,688.54
Revenues		**2031-32**			
	Transfer In	$50,000			$92,688.54
Expenses					

Auto Equipment	Fire Hose		$3,300	$3,300.00	$89,388.54
Other Capital Equipment	Turnout Gear (2)		$8,000	$8,000.00	$81,388.54
Fire and EMS Unscheduled					
SCBA Compressor		2034	$40,000		
Mobile Radios, Phones and Scanners			As needed		
Portable Radios (18)			Every 7 years		
SCBA's and Bottles		2031, 2032	$180,000		
Primary Engine - E552		2036	$600,000		
2024 Chevy Paramedic SUV		2034	$65,000		
2023 Ford Wheeled Coach Ambulance		2033	$475,000		

Public Works

				Budgeted	Actual	Running
						$571,500.00
Revenues			2023-2024			
	Transfer in RUT		$30,000			$601,500.00
	Transfer In		$45,000			$646,500.00
Expenses						
Equipment		End Loader		$250,000	$129,259.00	$517,241.00
Revenues			2024-25			
	Transfer in RUT		$30,000			$547,241.00
	Transfer In		$45,000			$592,241.00
Expenses						
Equipment		Dump Truck #5		$200,000	$243,885.65	$348,355.35
		Tar Machine		$65,000	$65,698.82	$282,656.53
Revenues			2025-26			
	Transfer in RUT		$75,000			$357,656.53
	Transfer In		$60,000			$417,656.53
Expenses						
Equipment		Class 5 Pickup		$120,000	$120,000.00	$297,656.53
		Dump Truck #6 - 20% Deposit		$50,000	$50,000.00	$247,656.53
		PW Shop Floor Repair		$65,000	$65,000.00	$182,656.53
Revenues			2026-27			
	Transfer in RUT		$100,000			$282,656.53
	Transfer In		$75,000			$357,656.53
Expenses						
		John Deere Mower		$38,000	$38,000.00	$319,656.53
		1/2 Ton Pickup #3		$55,000	$55,000.00	$264,656.53
		Dump Truck #6 - Final Payment		$200,000	$200,000.00	$64,656.53
Revenues			2027-28			
	Transfer in RUT		$40,000			$104,656.53
	Transfer In		$60,000			$164,656.53
Expenses						
Equipment		John Deere Z950M Zero Turn Mower		$22,000	$22,000.00	$142,656.53
		1/2 Ton Pickup #2		$55,000	$55,000.00	$87,656.53
		Boom Truck #7		$80,000	$80,000.00	$7,656.53
Revenues			2028-29			
	Transfer in RUT		$40,000			$127,656.53
	Transfer In		$60,000			$187,656.53
Expenses						
Equipment		1 Ton Chevy Truck #8		$55,000	$55,000.00	$132,656.53
		PW Locker Room Remodel		$100,000	$100,000.00	$32,656.53
Revenues			2029-30			
	Transfer In RUT		$40,000			$72,656.53
	Transfer In		$60,000			$132,656.53
Expenses						
		John Deere 1575 Riding Mower		$40,000	$40,000.00	$92,656.53
		Univ. Ave Traffic Signals ($50,000 TIF Funded)				$92,656.53
						$52,656.53
Revenues			2030-31			
	Transfer In RUT		$40,000			$92,656.53
	Transfer In		$60,000			$152,656.53
Expenses						
Equipment		73rd Street Traffic Signals ($200,000 TIF Funded)				$152,656.53
		Kubota UTV 1100 with implements		$40,000	$40,000.00	$112,656.53

Systems & Technology

				Budgeted	Actual	Running
						$49,929.53
Revenues			**2023-24**			
	Transfer In		$20,000			$69,929.53
Expenses						
Office Equipment		UPS 3		$5,000	$4,706.25	$65,223.28
		Workstations		$10,000	$7,882.87	$57,340.41
		Firewall		$2,500	$1,500.70	$55,839.71
		Server		$15,000	$15,792.17	$40,047.54
Revenues			**2024-25**			
	Transfer In		$15,000			$55,047.54
Expenses						
Office Equipment		Firewall		$10,000	$5,179.80	$49,867.74
		Cameras - PSB/CEC		$7,000	$8,261.06	$41,606.68
		Server Upgrades		$20,000	$25,210.63	$16,396.05
Revenues			**2025-26**			
	Transfer In		$30,000			$46,396.05
Expenses						
Office Equipment		Software - Workstations		$7,500	$7,500.00	$38,896.05
		Workstations		$10,000	$10,000.00	$28,896.05
		BodyCam Raid5 Harddrives 6TB		$2,000	$2,000.00	$26,896.05
		Firewall Software		$1,200	$1,200.00	$25,696.05
		City Hall Conf Room Camera/Microphone		$3,000	$3,000.00	$22,696.05
Revenues			**2026-27**			
	Transfer In		$30,000			$52,696.05
Expenses						
Office Equipment		Network Switches		$2,000	$2,000.00	$50,696.05
		Software - Mail		$3,500	$3,500.00	$47,196.05
		Workstations		$10,000	$10,000.00	$37,196.05
		Firewall Software		$1,200	$1,200.00	$35,996.05
Revenues			**2027-28**			
	Transfer In		$40,000			$75,996.05
Expenses						
Office Equipment		CEC Switch		$1,500	$1,500.00	$74,496.05
		Workstations		$10,000	$10,000.00	$64,496.05
		Firewall Software		$1,200	$1,200.00	$63,296.05
		Council AV		$30,000	$30,000.00	$33,296.05
		UPS Replacements		$2,500	$2,500.00	$30,796.05
Revenues			**2028-29**			
	Transfer In		$30,000			$60,796.05
Expenses						
Office Equipment		Phone System Cloud Changeover		$10,000	$10,000.00	$50,796.05
		Workstations		$10,000	$10,000.00	$40,796.05
		Firewall Software and Replacement		$3,000	$3,000.00	$37,796.05
		Camera Replacements & Software Change		$21,000	$21,000.00	$16,796.05
Revenues			**2029-30**			
	Transfer In		$30,000			$46,796.05
Expenses						
Office Equipment		Server NAS		$3,000	$3,000.00	$43,796.05
		UPS 1		$1,000	$1,000.00	$42,796.05
		Workstations		$10,000	$10,000.00	$32,796.05
		Phone Software		$9,000	$9,000.00	$23,796.05
		Access Points Replacements		$2,500	$2,500.00	$21,296.05
		Firewall Software		$1,200	$1,200.00	$20,096.05

Revenues			**2030-31**			
	Transfer In		$30,000			$50,096.05
Expenses						
Office Equipment		UPS Replacements		$1,000	$1,000.00	$49,096.05
		Workstations		$11,000	$11,000.00	$38,096.05
		Server Host Replacement (WHHV CTY 24)		$15,000	$15,000.00	$23,096.05
		Firewall Software & Replacement		$3,000	$3,000.00	$20,096.05
		Phone Software		$9,000	$9,000.00	$11,096.05
Revenues			**2031-32**			
	Transfer In		$25,000			$36,096.05
Expenses						
Office Equipment		Workstations		$11,000	$11,000.00	$25,096.05
		Firewall Software		$1,200	$1,200.00	$23,896.05
		Phone Software		$9,000	$9,000.00	$14,896.05
Revenues			**2032-33**			
	Transfer In		$25,000			$39,896.05
Expenses						
Office Equipment		Workstations		$11,000	$11,000.00	$28,896.05
		Firewall Software		$1,200	$1,200.00	$27,696.05
		Phone Software		$9,000	$9,000.00	$18,696.05
Unscheduled						
Desktops (18)		4 annually	$3,000			
Laptops (10)		3 annually	$3,900			
Monitors (31)		6 annually	$800			
CH Copier			Lease			

Community Event Center

				Budgeted	Actual	Running
						$118,322.89
Revenues			**2023-24**			
	CEC Revenue	(actual)	$17,870			$136,192.89
	Transfer In					$136,192.89
Expenses						
Equipment		Audio/Visual Equipment Final		$14,153	$14,152.50	$122,040.39
Revenues			**2024-25**			
	CEC Revenue	(estimated)	$20,000.00			$142,040.39
	Transfer In		$100,000			$242,040.39
Expenses						
Equipment		Solar Panels		$100,000	$100,000.00	$142,040.39
		Table Replacement - Phase 1		$40,000	$40,000.00	$102,040.39
		Appliance/Equipment Replacement		$8,000	$8,000.00	$94,040.39
Revenues			**2025-26**			
	CEC Revenue	(estimated)	$20,000.00			$114,040.39
	Transfer In					$114,040.39
Expenses						
Equipment		Appliance/Equipment Replacement		$8,000	$8,000.00	$106,040.39
		Table Replacement - Phase 2		$20,000	$20,000.00	$86,040.39
Revenues			**2026-27**			
	CEC Revenue	(estimated)	$20,000.00			$106,040.39
	Transfer In					$106,040.39
Expenses						
Equipment		Appliance/Equipment Replacement		$8,000	$8,000.00	$98,040.39
		Table Replacement - Phase 3		$18,000	$18,000.00	$80,040.39
Revenues			**2027-28**			
	CEC Revenue	(estimated)	$20,000.00			$100,040.39
	Transfer In					$100,040.39
Expenses						
Equipment		Banquet Chair Replacement		$15,000	$15,000.00	$85,040.39
		Solar Invertors		$5,000	$5,000.00	$80,040.39
		Appliance/Equipment Replacement		$8,000	$8,000.00	$72,040.39
Revenues			**2028-29**			
	CEC Revenue	(estimated)	$20,000.00			$92,040.39
	Transfer In					$92,040.39
Expenses						
Equipment		Appliance/Equipment Replacement		$8,000	$8,000.00	$84,040.39
Revenues			**2029-30**			
	CEC Revenue	(estimated)	$20,000.00			$104,040.39
	Transfer In					$104,040.39
Expenses						
Equipment		Appliance/Equipment Replacement		$8,000	$8,000.00	$96,040.39
Revenues			**2030-31**			
	CEC Revenue	(estimated)	$20,000.00			$116,040.39
	Transfer In					$116,040.39
Expenses						
Equipment		Appliance/Equipment Replacement		$8,000	$8,000.00	$108,040.39
		Solar Invertor Replacements		$5,000	$5,000.00	$103,040.39
		Large Kitchen Refresh		$75,000	$75,000.00	$28,040.39

Police Equipment Life and Replacement Schedule

	Vehicle/Equipment	Years of Service	Year of Replacement	Estimated Cost
	2007 Chevy Silverado w/equip	12:10	2019, 2029	$55,000
	2014 Chevy Tahoe w/equip	10	2024	$35,000
	2014 Ford Sedan Police w/equip	10	2024	$30,000
	2015 Ford Explorer w/equip	10	2025	$30,000
	2018 Ford Interceptor w/equip	12	2030	$35,000
	2018 Ford Interceptor w/equip	13	2031	$35,000
	2011 Ford Crown Vic. Police w/equip	9	Remove	$0
	2013 Ford Utility Police w/equip	7:6:6	2020, 2026, 2032	$55,000
	2015 Ford Utility Police w/equip	6:6:6	2021, 2027, 2033	$55,000
	2016 Utility Police w/equip	6:6	2022, 2028	$55,000
	2017 Ford Utility Police w/equip	6:6	2023, 2029	$55,000
	Body Worn Cameras (10)	3	2020, 2023, 2026	$11,000
	Canine	8	2026	$7,000
	Civil Disobedence Kits	10-15	2028	$3,000
	Facility Interview Camera Recorders	10	2027	$9,000
	Handguns (16)	20	2020	$8,000
	Investigative Camera #1	15	2022	$4,500
	Investigative Camera #2	15	2032	$5,000
	Laser Radar Unit	15	2018	$3,000
	Mobile Radios (11)	15	2029	$52,000
	Patrol Helmets / Shields	7-10	2025	$1,500
	Pepperball – Less Lethal (2)	7	2022, 2029	$2,000
	Plate Carriers	7-10	2025	$2,000
	Portable Radios (18)	10	2025	$72,000
	Portable Shelter – Tent	10	2026	$1,500
	RAD gear	10	2026	$4,500
	Rifles (12)	15	2024	$16,200
	Shotguns (8)	15	2031	$8,000
	Taser – Less Lethal (4)	7	2022, 2029	$8,000

STAFF REPORT
CITY COUNCIL
January 23, 2025

TO: CITY COUNCIL

FROM:

SUBJECT: Iowa DOT Notification of Work at 63rd and University Ave.

GENERAL INFORMATION

The Iowa DOT requested the attached information be provided at a City Council meeting. Work is slated to occur this summer during overnight hours.

ATTACHMENTS

None