



CITY OF ANAMOSA
CITY COUNCIL AGENDA – REGULAR SESSION

MONDAY, AUGUST 11, 2025 – 6:00 P.M.
ANAMOSA LIBRARY & LEARNING CENTER
600 E. 1ST STREET, ANAMOSA, IA 52205

Zoom Meeting Link (Viewing Only)
<https://us02web.zoom.us/j/86089851793>
Meeting ID: 860 8985 1793
Passcode: Anamosa

Join by Telephone
+1 312 626 6799 US
Meeting ID: 860 8985 1793
Passcode: 7681616

*To address the City Council, please wait for the Mayor to open the floor for public comment on an agenda item.
Before speaking, approach the podium, provide your name and address, and limit comments to five (5) minutes per agenda item.
Profane, obscene, or slanderous language will not be permitted.*

- 1.0) **Roll Call**
- 2.0) **Pledge Of Allegiance**
- 3.0) **Consent Agenda (Review & Approve):**
 - a) Minutes from July 28, 2025 – Regular Session.
 - b) Current bills.
 - c) Liquor licenses.
 - d) Noise/street closure permit applications.
- 4.0) **Postponed Items/Unfinished Business:**
 - 4.1) **Resolution 2025-48** – Approving the placement of two “Children At Play” signs in the public right-of-way, on S. Main Street, at the corner of S. Main Street/W. Hickory Street and S. Main Street/W. Mill Street, in Anamosa, Iowa. **Roll Call.**
 - 4.2) **Update** – Proposed annexation of Parcel 2008-53, in NE NW EXC Parcel 2004-66.
- 5.0) **Council Action Items:**
 - 5.1) **Presentation** – Sanitary Sewer Survey & Non-Compliance Review
 - 5.2) **Project Status Update** – Ford & Huber Sanitary Sewer Replacement Project.
 - 5.3) **Resolution 2025-49** – To rescind Resolution 2025-44 and set the date for a public hearing to vacate, sell, and convey City-owned right-of-way (former alley between 204 S. Division Street and 610 E. 2nd Street), pursuant to Section 364.7 of the Iowa Code. **Roll Call.**
 - 5.4) **Resolution 2025-50** – To approve and adopt the Multi-Jurisdictional Hazard Mitigation Plan, as maintained by Jones County Emergency Management. **Roll Call.**
 - 5.5) **Discussion & Possible Action** – Damaged property at 110 E. Main Street (Tom Durgin).
 - 5.6) **Review & Approve** – Jones County Emergency Response Team 28E Agreement.
 - 5.7) **Review & Approve** – Tree grinding services, from Boomerang Corp., for the Streets Department.
 - 5.8) **Review & Approve (Consent Agenda):** Pay requests totaling \$37,673.53.
 - a) From HR Green, in the amount of \$2,500.00, for the WTP Aerator Replacement Project.
 - b) From HR Green, in the amount of \$1,699.98, for the WTP Disinfection Systems CPS.
 - c) From HR Green, in the amount of \$150.50, for the Anamosa Sidewalk Program.
 - d) From HR Green, in the amount of \$412.50, for the Dillon Military Bridge Project.
 - e) From HR Green, in the amount of \$1,798.50, for the Engineering Master Services Agreement.
 - f) From HR Green, in the amount of \$17,835.75, for 3rd Street Sidewalk Extension Project.
 - g) From Snyder & Associates, in the amount of \$13,276.30, for the WWTP Flow EQ Basin Project.
- 6.0) **City Administrator’s Report**
- 7.0) **Mayor & Council Reports**
 - 7.1) Mayor’s report
 - 7.2) Council reports
- 8.0) **Public Comment For Items Not On The Agenda**
- 9.0) **Adjournment**

STATEMENT OF COUNCIL PROCEEDINGS

July 28, 2025

The City Council of the City of Anamosa met in Regular Session July 28, 2025, at the Anamosa Library and Learning Center at 6:00 P.M. with Mayor Rod Smith presiding. The following council members were present: Rich Crump, Kay Smith, Todd Weimer, Dan Smith, and Brooke Gombert. Absent: Teresa Tuetken. Also present were Jeremiah Hoyt, City Administrator and Kaylee Palmer, Deputy City Clerk.

Mayor Rod Smith called the meeting to order at 6:00 P.M. Roll call was taken with a quorum present.

Motion by K. Smith, seconded by Crump approving the consent agenda items: Minutes of the regular session 7/14/25, current bills, and Noise/street closure permits. Roll vote: Ayes- K. Smith, Weimer, D. Smith, Gombert, Crump. Nays- none. Motion carried.

Mayor Smith opened the public hearing at 6:02 P.M. on the Status of Funded Activities for the WWTP Flow EQ Basin Project. Meagan Prestegard from ECICOG presented the following:

PUBLIC HEARING – STATUS OF FUNDED ACTIVITIES

Monday, July 28 at 6:00 p.m.

Anamosa Library & Learning Center – 600 E. 1st Street, Anamosa, IA 52205

THE PURPOSE OF THIS HEARING IS TO CONSIDER THE STATUS OF FUNDED ACTIVITIES FOR THE ANAMOSA WASTEWATER TREATMENT PLANT IMPROVEMENTS PROJECT, AS ASSISTED BY THE COMMUNITY DEVELOPMENT BLOCK GRANT (CDBG) PROGRAM (CONTRACT # 23-WS-025)

As required for this hearing, it is noted that:

- a. For a general description of accomplishments to-date, a CDBG Water Sewer contract in the amount of \$500,000.00 was awarded to the City of Anamosa from the Iowa Economic Development Authority for the installation of a 3-million-gallon concrete flow-equalization tank at 1204 Walworth Avenue in Anamosa, with a release of funds issued on July 1, 2024. A pre-construction conference was held on January 3, 2025, and construction began on January 14, 2025. Construction of the project is still underway.
- b. For a summary of funding of the activity and source of funds, and total funds spent thus far by source, the total project cost is estimated at \$4,190,215.07. In addition to CDBG, the project is funded by an Iowa Department of Natural Resources State Revolving Fund (SRF) loan for the remainder. Through June 30, 2025, a total of \$3,253,593.32 has been invoiced for construction expenses, and \$368,228.50 has been reimbursed by CDBG funds. Construction items included materials and labor for installation of the prestressed concrete tank, along with associated footings, piping, and pumps. Other expenses included grading, earth work, and pavement removal.

- c. For a general description of remaining work, **the project is approximately 80% completed. The remaining work includes completing the tank installation, installing the stairs and walkway around the tank, and constructing the lift station building. Other remaining items include additional piping, grading, and completing controls and electrical work.**
- d. For a general description of changes made to the project budget, performance targets, activity schedules, project scope, location, objectives or beneficiaries, **the project is currently on schedule to be completed in February 2026.**

Public in attendance: Members of the public were present in person and via Zoom.

Mayor Smith opened the floor to public comment. No public comment was made. Mayor Smith closed the public hearing at 6:06 P.M.

City Administrator Hoyt presented the Council an update on the proposed annexation of Parcel 2008-53, in NE NW EXC Parcel 2004-66. The City and the property owner are currently working on sorting out the details of the contract. Steve Agnitsch, the Public Utilities Director, is looking into options available to the property owner for the connection to the city sewer line.

Motion by Weimer, seconded by D. Smith approving the plans, specifications, and contract; authorizing the bid letting; and setting the public hearing for the WTP Aerator Replacement Project for September 8, 2025, at 6:00 P.M. Roll vote: Ayes- Weimer, D. Smith, Gombert, Crump, K. Smith. Nays- none. Motion carried.

Motion by K. Smith, seconded by Crump approving the appointments to the Library Board of Trustees to fill terms ending June 30, 2028. Roll vote: Ayes- D. Smith, Gombert, Crump, K. Smith, Weimer. Nays- none. Motion carried.

Motion by Crump, seconded by K. Smith approving Resolution 2025-47 setting the wage for the position of the full-time Assistant Parks & Recreation Director for the fiscal year ending June 30, 2026. Roll vote: Ayes- Gombert, Crump, K. Smith, Weimer, D. Smith. Nays- none. Motion carried.

Motion by Crump, seconded by D. Smith approving the request to bring a Resolution to Council for approval regarding the placement of two “Slow Down-Children At Play” signs in the Public Right-Of-Way, at 902 South Main Street. Roll vote: Ayes- D. Smith, Gombert, Crump, K. Smith, Weimer. Nays- none. Motion carried.

Motion by D. Smith, seconded by Gombert approving the purchase of a Volleyball System for the Lawrence Community Center, from Sports Imports, in the amount of \$3,879.65. Roll vote: Ayes- Weimer, D. Smith, Gombert, Crump, K. Smith. Nays- none. Motion carried.

Motion by Crump, seconded by K. Smith approving the Consent Agenda pay requests totaling \$22,035.33. Roll vote: Ayes- K. Smith, Weimer, D. Smith, Gombert, Crump. Nays- none. Motion carried.

Mayor Smith opened the floor to public comment for items not on the agenda. No public comment was made.

Motion by Crump, seconded by Gombert to enter into closed session, per Iowa State Code Section 21.5(1)(c) to discuss strategy with counsel in matters that presently in litigation or where litigation is imminent where its disclosure would be likely to prejudice or disadvantage the position of the governmental body in that litigation. Roll vote: Ayes- Crump, K. Smith, Weimer, D. Smith, Gombert. Nays- none. Motion carried.

Council entered into closed session at 6:29 P.M.

Council entered into open session at 6:49 P.M.

Motion by Weimer, seconded by Crump approving the motion to direct the City Attorney to proceed as advised in the closed session. Roll vote: Ayes- K. Smith, Weimer, D. Smith, Gombert, Crump. Nays- none. Motion carried.

Motion by Weimer, seconded by D. Smith approving the motion to enter into closed session, per Iowa State Code Section 21.5(1)(i) to evaluate the professional competency of an individual whose appointment, hiring, performance, or discharge is being considered when necessary to prevent needless and irreparable injury to that individual's reputation and that individual requests a closed session. Roll vote: Ayes- Weimer, D. Smith, Gombert, Crump, K. Smith. Nays- none. Motion carried.

Council entered into closed session at 6:51 P.M.

Council entered into open session at 6:57 P.M.

Meeting adjourned at 7:00 P.M.

Rod Smith, Mayor

ATTEST:

Jeremiah Hoyt, City Administrator



City of Anamosa, IA

Expense Approval Report By Fund

Post Dates 7/29/2025 - 8/11/2025

Vendor Name	Post Date	Description (Item)	Account Number	Amount
Fund: 001 - GENERAL FUND				
Department: 000 - 000				
THE HARTFORD	08/01/2025	AD&D	001-000-2208	52.20
WELLMARK BLUE CROSS BLUE...	08/01/2025	ALLIANCE HEALTH INSURANCE	001-000-2205	27,031.68
WELLMARK BLUE CROSS BLUE...	08/01/2025	BLUE ADVANTAGE HEALTH IN...	001-000-2205	7,366.07
COLLECTION SERVICES CENTER	08/01/2025	COLLECTION SERVICES	001-000-2204	257.55
DELTA DENTAL PLAN OF IOWA	08/01/2025	DELTA DENTAL INSURANCE	001-000-2205	1,414.06
CITY OF ANAMOSA	08/01/2025	FLEXIBLE - CHILDCARE	001-000-2204	134.62
CITY OF ANAMOSA	08/01/2025	FLEX - MEDICAL	001-000-2204	204.38
IPERS COLLECTIONS	08/01/2025	IPERS	001-000-2203	7,137.65
THE HARTFORD	08/01/2025	LIFE INSURANCE	001-000-2208	391.50
THE HARTFORD	08/01/2025	LTD	001-000-2208	348.80
IPERS COLLECTIONS	08/01/2025	IPERS	001-000-2203	3,435.86
VSP Insurance Co	08/01/2025	VSP INSURANCE	001-000-2205	375.11
941 TAX EFT PAYMENT	08/01/2025	MEDICARE TAX	001-000-2206	2,321.90
941 TAX EFT PAYMENT	08/01/2025	SOCIAL SECURITY TAX	001-000-2202	9,927.96
941 TAX EFT PAYMENT	08/01/2025	FEDERAL TAX	001-000-2200	4,862.60
TREASURER STATE OF IOWA	08/01/2025	STATE TAX	001-000-2201	1,921.24
941 TAX EFT PAYMENT	08/04/2025	MEDICARE TAX	001-000-2206	63.20
941 TAX EFT PAYMENT	08/04/2025	SOCIAL SECURITY TAX	001-000-2202	270.20
941 TAX EFT PAYMENT	08/04/2025	FEDERAL TAX	001-000-2200	183.07
TREASURER STATE OF IOWA	08/04/2025	STATE TAX	001-000-2201	65.26
Department 000 - 000 Total:				67,764.91
Department: 110 - POLICE				
ACCESS SYSTEMS LEASING	08/11/2025	COPIER LEASE	001-110-6470	151.95
AUXIANT	08/11/2025	SELF FUNDED INSURANCE	001-110-6155	29.41
AUXIANT	08/11/2025	SELF FUNDED INSURANCE	001-110-6155	18.80
ARNOLD MOTOR SUPPLY, LLP	08/11/2025	FULL FLOW LUBE	001-110-6474	9.39
Department 110 - POLICE Total:				209.55
Department: 290 - SOLID WASTE				
T & D TREE SERVICE	08/11/2025	TREE DAMAGE	001-290-6428	2,950.00
Department 290 - SOLID WASTE Total:				2,950.00
Department: 450 - CEMETERY FUND				
ANAMOSA MONUMENTS CO...	08/11/2025	MAITENANCE	001-450-4741	300.00
HENRY/TROY	08/11/2025	BURIAL SERVICES	001-450-6491	750.00
Department 450 - CEMETERY FUND Total:				1,050.00
Department: 622 - SUPPORT ADMINISTRATION				
ANAMOSA JOURNAL-EUREKA	08/11/2025	LEGALS	001-622-6414	229.61
ACCESS SYSTEMS LEASING	08/11/2025	COPIER LEASE	001-622-6470	151.96
ANAMOSA JOURNAL-EUREKA	08/11/2025	LEGALS	001-622-6414	212.37
EXPRESS PRINTING & DESIGN ...	08/11/2025	RESIDENT SURVEY MAILERS	001-622-6542	1,567.36
ENCOMPASS	08/11/2025	IT SERVICES	001-622-6480	5,154.00
MCALEER	08/11/2025	WATER REFILL	001-622-6530	29.00
Department 622 - SUPPORT ADMINISTRATION Total:				7,344.30
Fund 001 - GENERAL FUND Total:				79,318.76
Fund: 015 - FIRE SERVICE				
Department: 150 - FIRE DEPARTMENT				
CENTURYLINK	08/11/2025	PHONE	015-150-6373	220.01
FIRE SERVICE TRAINING BURE...	08/11/2025	INSTRUCTOR TEST	015-150-6445	50.00
FRANK/DANIEL	08/11/2025	CHAIN SAW SHARPENING	015-150-6470	67.00
Department 150 - FIRE DEPARTMENT Total:				337.01
Fund 015 - FIRE SERVICE Total:				337.01

Expense Approval Report

Post Dates: 7/29/2025 - 8/11/2025

Vendor Name	Post Date	Description (Item)	Account Number	Amount
Fund: 041 - LIBRARY FUND				
Department: 410 - LIBRARY				
AUXIANT	08/11/2025	SELF FUNDED INSURANCE	041-410-6155	521.61
Department 410 - LIBRARY Total:				521.61
Fund 041 - LIBRARY FUND Total:				521.61
Fund: 043 - PARKS & RECREATION				
Department: 430 - RECREATION				
JOHN DEERE FINANCIAL	08/11/2025	PARTS	043-430-6470	224.75
JARED NELSON	08/11/2025	TENNIS CAMP INSTRUCTOR	043-430-6531	150.00
SPORTS IMPORTS INC	08/11/2025	VOLLEYBALL NET SYSTEM	043-430-6531	3,879.65
SELECT SERVICE PUMPING	08/11/2025	PORTABLE RESTROOM	043-430-6520	130.00
CACTUS MOON MUSIC, LLC	08/11/2025	MUSIC IN THE PARK	043-430-6490	500.00
JOHN DEERE FINANCIAL	08/11/2025	ENGINE OIL	043-430-6475	26.94
YODER, CALE	08/11/2025	MILE REIMBURSEMENT	043-430-6551	32.20
JOHN DEERE FINANCIAL	08/11/2025	POWER WASHER	043-430-6475	87.66
Department 430 - RECREATION Total:				5,031.20
Fund 043 - PARKS & RECREATION Total:				5,031.20
Fund: 044 - AQUA COURT				
Department: 440 - AQUA COURT				
IOWA PRISON INDUSTRIES	08/11/2025	NITRILE GLOVES	044-440-6540	233.38
TOWN & COUNRTY WHOLESAL...	08/11/2025	POOL CONCESSIONS	044-440-6546	689.21
TREASURER STATE OF IOWA	08/11/2025	SALES TAX	044-440-6491	659.16
TREASURER STATE OF IOWA	08/11/2025	SALES TAX	044-440-6493	109.86
DELANCEY ELECTRIC CO.	08/11/2025	TROUBLESHOOT LIGHT	044-440-6475	260.00
Department 440 - AQUA COURT Total:				1,951.61
Fund 044 - AQUA COURT Total:				1,951.61
Fund: 046 - LAWRENCE COMMUNITY CENTER FUND				
Department: 460 - LAWRENCE COMMUNITY CENTER				
ACCESS SYSTEMS LEASING	08/11/2025	COPIER LEASE	046-460-6470	223.57
HINZ LANDSCAPING	08/11/2025	RETAINING WALL	046-460-6475	4,500.00
CENTRAL IOWA DISTRIBUTING	08/11/2025	JANITORIAL SUPPLIES	046-460-6541	718.00
8 FINGER HVAC LLC	08/11/2025	RESTORE AC UNITS	046-460-6475	1,625.00
Department 460 - LAWRENCE COMMUNITY CENTER Total:				7,066.57
Fund 046 - LAWRENCE COMMUNITY CENTER FUND Total:				7,066.57
Fund: 110 - ROAD USE TAX				
Department: 211 - Public Services - community betterment				
JOHN DEERE FINANCIAL	08/11/2025	PARTS	110-211-6470	554.22
FAREWAY STORES, INC.	08/11/2025	BOTTLED WATER	110-211-6553	238.80
JOHN DEERE FINANCIAL	08/11/2025	CONCRETE	110-211-6543	15.99
STAR EQUIPMENT LTD.	08/11/2025	EASY SCREED	110-211-6504	617.18
REXCO EQUIPMENT	08/11/2025	BOBCAT PARTS	110-211-6470	265.10
CARROLL DISTRIBUTING & CO...	08/11/2025	REBAR	110-211-6543	675.00
LAWSON PRODUCTS, INC.	08/11/2025	SANDING WHEELS/DISCS	110-211-6530	152.48
ARNOLD MOTOR SUPPLY, LLP	08/11/2025	SUSPENSION KIT	110-211-6474	78.32
ARNOLD MOTOR SUPPLY, LLP	08/11/2025	STRUT ASSEMBLY	110-211-6474	146.91
Department 211 - Public Services - community betterment Total:				2,744.00
Fund 110 - ROAD USE TAX Total:				2,744.00
Fund: 600 - WATER FUND				
Department: 810 - 810				
USA BLUE BOOK	08/11/2025	SAMPLING VALVES	600-810-6504	109.82
HOTSY CLEANING SYSTEMS	08/11/2025	POWERWASHER REPAIRS	600-810-6455	150.83
USA BLUE BOOK	08/11/2025	FLUSHING PARTS	600-810-6504	1,079.95
IOWA ONE CALL	08/11/2025	LOCATES	600-810-6489	70.65
JOHN DEERE FINANCIAL	08/11/2025	DEHUMIDIFIER	600-810-6504	149.99
STAR EQUIPMENT LTD.	08/11/2025	EASY SCREED	600-810-6504	617.17
JOHN DEERE FINANCIAL	08/11/2025	BRASS FITTINGS	600-810-6504	22.76
AUXIANT	08/11/2025	SELF FUNDED INSURANCE	600-810-6155	658.45

Expense Approval Report

Post Dates: 7/29/2025 - 8/11/2025

Vendor Name	Post Date	Description (Item)	Account Number	Amount
JOHN DEERE FINANCIAL	08/11/2025	DEHUMIDIFIER	600-810-6504	149.99
TREASURER STATE OF IOWA	08/11/2025	WET TAX	600-810-6491	4,401.72
J&R SUPPLY	08/11/2025	REPAIR CLAMPS	600-810-6782	400.00
WATER SOLUTIONS UNLIMITED	08/11/2025	CHEMICALS	600-810-6501	4,358.12
AUXIANT	08/11/2025	SELF FUNDED INSURANCE	600-810-6155	979.66
OLIN-MORLEY TELEPHONE C...	08/11/2025	PHONE	600-810-6373	104.95
US POSTMASTER	08/05/2025	UB REMINDERS	600-810-6508	101.57
MUNICIPAL SUPPLY, INC.	08/11/2025	WATER METER SOCKET	600-810-6504	81.76

Department 810 - 810 Total: **13,437.39**

Fund 600 - WATER FUND Total: **13,437.39**
Fund: 610 - WASTEWATER FUND**Department: 815 - 815**

CHEMSEARCH	08/11/2025	ECOSTORM	610-815-6501	165.00
GAZETTE COMMUNICATIONS, ...	08/11/2025	LEGAL NOTICE - SRF LOAN	610-815-6402	35.17
CHEMSEARCH	08/11/2025	ECOSTORM	610-815-6501	165.00
ANAMOSA JOURNAL-EUREKA	08/11/2025	STORM DISCHARGE PUBLICAT...	610-815-6402	16.86
CHEMSEARCH	08/11/2025	ECOSTORM	610-815-6501	165.00
RECREATIONAL MOTOR SPOR...	08/11/2025	JULY SHIPPING	610-815-6431	114.60
RECREATIONAL MOTOR SPOR...	08/11/2025	WETT TEST SHIPPING	610-815-6431	25.27
ANAMOSA JOURNAL-EUREKA	08/11/2025	WW NOTICE	610-815-6402	16.17
IOWA ONE CALL	08/11/2025	LOCATES	610-815-2901	70.65
MISSION COMMUNICATIONS, ...	08/11/2025	MISSION ALARMS	610-815-6553	694.80
ALTORFER MACHINERY CO	08/11/2025	2ND STREET GEN EMERGENCY	610-815-6785	1,113.00
CHEM RIGHT LABORATORIES ...	08/11/2025	ECOLI TEST	610-815-6479	26.00
STAR EQUIPMENT LTD.	08/11/2025	EASY SCREED	610-815-6504	617.17
HACH COMPANY	08/11/2025	TESTING SUPLLIES	610-815-6501	241.05
ARNOLD MOTOR SUPPLY, LLP	08/11/2025	FUEL FILTER	610-815-6474	19.06
ARNOLD MOTOR SUPPLY, LLP	08/11/2025	WIPER BLADES	610-815-6474	13.15
RHINO INDUSTRIES INC	08/11/2025	POLYMER TOTE	610-815-6501	4,899.00
TREASURER STATE OF IOWA	08/11/2025	SALES TAX	610-815-6491	450.23
TREASURER STATE OF IOWA	08/11/2025	SALES TAX	610-815-6493	75.04
HACH COMPANY	08/11/2025	TESTING SUPPLIES	610-815-6501	970.31
CHEMSEARCH	08/11/2025	ECOSTORM	610-815-6501	165.00
US POSTMASTER	08/05/2025	UB REMINDERS	610-815-6508	101.56

Department 815 - 815 Total: **10,159.09**

Fund 610 - WASTEWATER FUND Total: **10,159.09**

Grand Total: **120,567.24**

Report Summary

Fund Summary

Fund	Expense Amount	Payment Amount
001 - GENERAL FUND	79,318.76	67,794.32
015 - FIRE SERVICE	337.01	0.00
041 - LIBRARY FUND	521.61	521.61
043 - PARKS & RECREATION	5,031.20	0.00
044 - AQUA COURT	1,951.61	769.02
046 - LAWRENCE COMMUNITY CENTER FUND	7,066.57	0.00
110 - ROAD USE TAX	2,744.00	0.00
600 - WATER FUND	13,437.39	5,161.74
610 - WASTEWATER FUND	10,159.09	626.83
Grand Total:	120,567.24	74,873.52

Account Summary

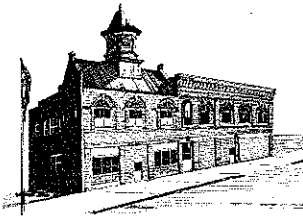
Account Number	Account Name	Expense Amount	Payment Amount
001-000-2200	FIT HOLDING	5,045.67	5,045.67
001-000-2201	SIT HOLDING	1,986.50	1,986.50
001-000-2202	FICA HOLDING	10,198.16	10,198.16
001-000-2203	IPERS HOLDING	10,573.51	10,573.51
001-000-2204	PEDC HOLDING	596.55	596.55
001-000-2205	HEALTH & CANCER INS. ...	36,186.92	36,186.92
001-000-2206	MEDICARE HOLDING	2,385.10	2,385.10
001-000-2208	LIFE HOLDING	792.50	792.50
001-110-6155	SELF FUNDED HEALTH INS	48.21	29.41
001-110-6470	EQUIPMENT MAINT CO...	151.95	0.00
001-110-6474	MAINTENANCE, VEHICLE	9.39	0.00
001-290-6428	TREE TRIMMING/STUMP...	2,950.00	0.00
001-450-4741	CEMETERY MAINTENAN...	300.00	0.00
001-450-6491	GRAVE SERVICING	750.00	0.00
001-622-6414	PUBLIC NOTICES	441.98	0.00
001-622-6470	OFFICE EQUIPMENT/MA...	151.96	0.00
001-622-6480	IT Services/Computer Ma..	5,154.00	0.00
001-622-6530	SUPPLIES, OPERATIONS	29.00	0.00
001-622-6542	SUPPLIES, MISCELLANE...	1,567.36	0.00
015-150-6373	UTILITIES, TELEPHONE	220.01	0.00
015-150-6445	TRAINING AND REGISTR...	50.00	0.00
015-150-6470	MAINTENANCE, EQUIP...	67.00	0.00
041-410-6155	SELF FUNDED HEALTH INS	521.61	521.61
043-430-6470	MAINTENANCE, EQUIP...	224.75	0.00
043-430-6475	MAINTENANCE, BLDGS &..	114.60	0.00
043-430-6490	EVENT EXPENSES	500.00	0.00
043-430-6520	SANITATION FACILITIES	130.00	0.00
043-430-6531	SUPPLIES, REC. PROGR...	4,029.65	0.00
043-430-6551	FUEL EXPENSE	32.20	0.00
044-440-6475	MAINTENANCE, BLDGS &..	260.00	0.00
044-440-6491	SALES TAXES PAID	659.16	659.16
044-440-6493	LOCAL OPTION SALES TA...	109.86	109.86
044-440-6540	SUPPLIES, BLDGS. & GR...	233.38	0.00
044-440-6546	MERCHANDISE FOR RES...	689.21	0.00
046-460-6470	MAINTENANCE, EQUIP...	223.57	0.00
046-460-6475	MAINTENANCE, BLDGS &..	6,125.00	0.00
046-460-6541	SUPPLIES, JANITORIAL ...	718.00	0.00
110-211-6470	MAINTENANCE, EQUIP...	819.32	0.00
110-211-6474	MAINTENANCE, VEHICLE	225.23	0.00
110-211-6504	EQUIPMENT, SMALL	617.18	0.00
110-211-6530	SUPPLIES, OPERATIONS	152.48	0.00
110-211-6543	SUPPLIES, STREET MAIN...	690.99	0.00
110-211-6553	MISCELLANEOUS SUPPLI...	238.80	0.00
600-810-6155	SELF FUNDED HEALTH INS	1,638.11	658.45

Account Summary

Account Number	Account Name	Expense Amount	Payment Amount
600-810-6373	UTILITIES, TELEPHONE	104.95	0.00
600-810-6455	MAINTENANCE, EQUIP...	150.83	0.00
600-810-6489	PROFESSIONAL SERVICES	70.65	0.00
600-810-6491	SALES TAXES PAID	4,401.72	4,401.72
600-810-6501	CHEMICALS	4,358.12	0.00
600-810-6504	EQUIPMENT, SMALL	2,211.44	0.00
600-810-6508	SUPPLIES, POSTAGE	101.57	101.57
600-810-6782	WATER SYSTEM IMPRO...	400.00	0.00
610-815-2901	ACCOUNTS PAYABLE	70.65	0.00
610-815-6402	ADVERTISING, GENERAL	68.20	0.00
610-815-6431	SHIPPING	139.87	0.00
610-815-6474	MAINTENANCE, VEHICLE	32.21	0.00
610-815-6479	PROF. SERVICES - TESTI...	26.00	0.00
610-815-6491	SALES TAXES PAID	450.23	450.23
610-815-6493	LOCAL OPTION SALES TA...	75.04	75.04
610-815-6501	CHEMICALS	6,770.36	0.00
610-815-6504	EQUIPMENT, SMALL	617.17	0.00
610-815-6508	SUPPLIES, POSTAGE	101.56	101.56
610-815-6553	MISCELLANEOUS EXPEN...	694.80	0.00
610-815-6785	WASTEWTR SYSTEM IM...	1,113.00	0.00
Grand Total:		120,567.24	74,873.52

Project Account Summary

Project Account Key	Expense Amount	Payment Amount
None	120,567.24	74,873.52
Grand Total:	120,567.24	74,873.52



City of Anamosa

107 South Ford Street
Anamosa, Iowa 52205
Kaylee Palmer, Deputy City Clerk
(319)462-6055, Ext 301
Email: kaylee.palmer@anamosa-ia.org

LIQUOR LICENSE RENEWAL OR NEW APPLICATION

ALCOHOL COMPLIANCE TRAINING CERTIFICATION

Name of Applicant: PKS Hospitality
Trade Name (DBA): Americ Inn Lodge & Suites
Street Address: 101 Harley Ave Anamosa, IA 52205
Phone (Business): 319.462.4119 Home (or cell): 319.480.0462

As per Ordinance No. 898 adopted by the Anamosa City Council on the 9th day February, 2015 and enacted on the 19th day of February, 2015, all persons involved in the selling, serving or dispensing of alcoholic beverages shall participate in and complete a free alcohol training program (in person or online) offered by the Iowa Alcoholic Beverage Division's approved training, the Anamosa Police Department or it's designee. All persons required to complete training shall do so within ninety (90) days of the date on which the person becomes subject to the training requirement (date of hire or enactment of this ordinance). If such training is not offered within the ninety days, the person subject to the requirements of this ordinance shall notify the Anamosa Police Department of that fact and the date upon which the employee can complete the required training. All persons completing the training required by this section shall maintain active certification. Approval of liquor license applications is contingent on all servers/sellers completing the required training within the 90 day timeframe mentioned above. If a business fails a compliance check, all servers/sellers who do not hold the in-person certification must complete the in-person classroom training with the Anamosa Police Department or it's designee within 90 days of the violation.

I, Kathy Luensman, the owner or authorized person of the liquor license applicant (business) stated above, have read the above ordinance statement requiring that all persons working at the business as of this date, have either met the requirement for Alcohol Compliance Training or has notified the Anamosa Police Department of when the person can complete the required training.

Kathy Luensman
Owner or Authorized Person

8-1-25
Date

Kathy Luensman
Printed Name of Owner or Authorized Person

General Manager
Title

CITY OF ANAMOSA
APPROVAL FORM FOR LIQUOR AND BEER LICENSE APPLICATIONS

Class C Beer/Liquor
Sunday: Yes X No
New/ Renewal / Amended
Circle Appropriate Info.

NAME OF APPLICANT: PKS Hospitality
TRADE NAME (DBA): Americ Inn Lodge & Suites
STREET ADDRESS: 101 Harley Ave Anamosa, IA 52205
PHONE (BUSINESS): 319.462.4119 **HOME (OR CELL):** 319.480.0462

The undersigned have by the signatures of the officials noted below, certify that the above mentioned structure conforms to all laws within the jurisdictional limits of enforcement of said officials and may receive approval of this application.

ANAMOSA POLICE DEPARTMENT

The above named applicant(s) is approved by this department to have a beer and/or liquor license at the above location.

[Signature]
Police Chief

City Administrator

Date

08/06/25

Leave form at City Hall after Fire and Health signatures are complete

ANAMOSA FIRE DEPARTMENT: Fire Inspection Fee -- \$35.00 (Make check out to: City of Anamosa)

[Signature]
Fire Chief (or designee)

Phone: 319-462-4434 for appointment

Date

7/31/25

JONES COUNTY ENVIRONMENTAL HEALTH DEPARTMENT: (If applicable)

The above mentioned structure and business is in compliance with the Jones County Board of Health Regulations.

[Signature]
Jones County Environmental Health Official

Phone: 319-462-4715 for appointment

Date

7-28-2025

PLEASE RETURN FORM TO KAYLEE AT CITY HALL WHEN COMPLETED

Received at City Hall 8-1-25 for the _____ Council Meeting

CITY OF ANAMOSA
APPROVAL FORM FOR LIQUOR AND BEER LICENSE APPLICATIONS

Class Beer/Liquor
Sunday: Yes No
New/Renewal/Amended
Circle Appropriate Info.

NAME OF APPLICANT: ARTS COURT VISUAL AND PERFORMANCE

TRADE NAME (DBA): ARTS COURT

STREET ADDRESS: 107 N GARNAVILLO

PHONE (BUSINESS): **HOME (OR CELL):** 319-821-1424

The undersigned have by the signatures of the officials noted below, certify that the above mentioned structure conforms to all laws within the jurisdictional limits of enforcement of said officials and may receive approval of this application.

ANAMOSA POLICE DEPARTMENT

The above named applicant(s) is approved by this department to have a beer and/or liquor license at the above location.

[Signature] [Signature] 08/06/25
Police Chief Date

Leave form at City Hall after Fire and Health signatures are complete

ANAMOSA FIRE DEPARTMENT: Fire Inspection Fee -- \$35.00 (Make check out to: City of Anamosa)

[Signature] 8/6/25
Fire Chief (or designee) Date

Phone: 319-462-4434 for appointment

JONES COUNTY ENVIRONMENTAL HEALTH DEPARTMENT: (If applicable)

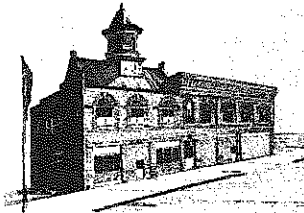
The above mentioned structure and business is in compliance with the Jones County Board of Health Regulations.

[Signature] 8/6/2025
Jones County Environmental Health Official Date

Phone: 319-462-4715 for appointment

PLEASE RETURN FORM TO KAYLEE AT CITY HALL WHEN COMPLETED

Received at City Hall for the Council Meeting



City of Anamosa

107 South Ford Street
Anamosa, Iowa 52205
Kaylee Palmer, Deputy City Clerk
(319)462-6055, Ext 301
Email: kaylee.palmer@anamosa-ia.org

LIQUOR LICENSE RENEWAL OR NEW APPLICATION

ALCOHOL COMPLIANCE TRAINING CERTIFICATION

Name of Applicant: ARTS COURT VISUAL AND PERFORMANCE
Trade Name (DBA): ARTS COURT
Street Address: 107 N GARNAVILLO
Phone (Business): _____ Home (or cell): 319-821-1425

As per Ordinance No. 898 adopted by the Anamosa City Council on the 9th day February, 2015 and enacted on the 19th day of February, 2015, all persons involved in the selling, serving or dispensing of alcoholic beverages shall participate in and complete a free alcohol training program (in person or online) offered by the Iowa Alcoholic Beverage Division's approved training, the Anamosa Police Department or it's designee. All persons required to complete training shall do so within ninety (90) days of the date on which the person becomes subject to the training requirement (date of hire or enactment of this ordinance). If such training is not offered within the ninety days, the person subject to the requirements of this ordinance shall notify the Anamosa Police Department of that fact and the date upon which the employee can complete the required training. All persons completing the training required by this section shall maintain active certification. Approval of liquor license applications is contingent on all servers/sellers completing the required training within the 90 day timeframe mentioned above. If a business fails a compliance check, all servers/sellers who do not hold the in-person certification must complete the in-person classroom training with the Anamosa Police Department or it's designee within 90 days of the violation.

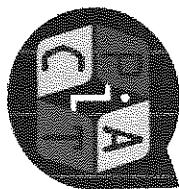
I, _____, the owner or authorized person of the liquor license applicant (business) stated above, have read the above ordinance statement requiring that all persons working at the business as of this date, have either met the requirement for Alcohol Compliance Training or has notified the Anamosa Police Department of when the person can complete the required training.

KC Wortman
Owner or Authorized Person

8-7-25
Date

KC WORTMAN
Printed Name of Owner or Authorized Person

8-7-25
Title



Certificate of Completion

Awarded to:

KC K Wortman

For completion of:

Iowa Program for Alcohol Compliance Training

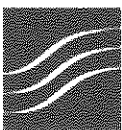
Date of completion: Aug 16, 2024

Expires on: Aug 16, 2026

Certificate No: 245170

*Thank you for participating in the Iowa Program for Alcohol Compliance Training and for partnering
with the Iowa Alcoholic Beverages Division to not sell alcohol to Iowa's minors.*

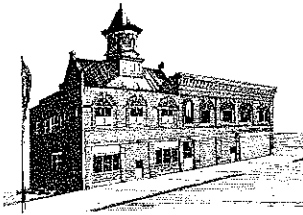
State of Iowa
Alcoholic Beverages Division
1918 SE Hulsizer Road,
Ankeny, IA 50021



ALCOHOLIC
BEVERAGES
DIVISION
State of Iowa

A handwritten signature in black ink, appearing to read 'Stephen Larson'.

Stephen Larson
Administrator



City of Anamosa

107 South Ford Street
Anamosa, Iowa 52205
Kaylee Palmer, Deputy City Clerk
(319)462-6055, Ext 301
Email: kaylee.palmer@anamosa-ia.org

LIQUOR LICENSE RENEWAL OR NEW APPLICATION

ALCOHOL COMPLIANCE TRAINING CERTIFICATION

Name of Applicant: Brandocks LLC LeeAnne Boone
Trade Name (DBA): Brandocks Emporium
Street Address: 130 E Main St
Phone (Business): 319-251-0405 Home (or cell): 319-821-0071

As per Ordinance No. 898 adopted by the Anamosa City Council on the 9th day February, 2015 and enacted on the 19th day of February, 2015, all persons involved in the selling, serving or dispensing of alcoholic beverages shall participate in and complete a free alcohol training program (in person or online) offered by the Iowa Alcoholic Beverage Division's approved training, the Anamosa Police Department or it's designee. All persons required to complete training shall do so within ninety (90) days of the date on which the person becomes subject to the training requirement (date of hire or enactment of this ordinance). If such training is not offered within the ninety days, the person subject to the requirements of this ordinance shall notify the Anamosa Police Department of that fact and the date upon which the employee can complete the required training. All persons completing the training required by this section shall maintain active certification. Approval of liquor license applications is contingent on all servers/sellers completing the required training within the 90 day timeframe mentioned above. If a business fails a compliance check, all servers/sellers who do not hold the in-person certification must complete the in-person classroom training with the Anamosa Police Department or it's designee within 90 days of the violation.

I, LeeAnne Boone, the owner or authorized person of the liquor license applicant (business) stated above, have read the above ordinance statement requiring that all persons working at the business as of this date, have either met the requirement for Alcohol Compliance Training or has notified the Anamosa Police Department of when the person can complete the required training.

LeeAnne Boone
Owner or Authorized Person

8.6.25
Date

LeeAnne Boone
Printed Name of Owner or Authorized Person

Owner
Title

CITY OF ANAMOSA
APPROVAL FORM FOR LIQUOR AND BEER LICENSE APPLICATIONS

Class _____ Beer/Liquor
Sunday: Yes _____ No _____
New/Renewal/Amended
Circle Appropriate Info.

NAME OF APPLICANT: Boondocks LLC LeeAnna Boone
TRADE NAME (DBA): Boondocks Emporium
STREET ADDRESS: 701 E Third St (Anamosa Fire Dept)
PHONE (BUSINESS): 319-251-0405 **HOME (OR CELL):** 319-821-0071

The undersigned have by the signatures of the officials noted below, certify that the above mentioned structure conforms to all laws within the jurisdictional limits of enforcement of said officials and may receive approval of this application.

ANAMOSA POLICE DEPARTMENT

The above named applicant(s) is approved by this department to have a beer and/or liquor license at the above location.

[Signature] City Administrator 08/07/25
Police Chief Date
Leave form at City Hall after Fire and Health signatures are complete

ANAMOSA FIRE DEPARTMENT: Fire Inspection Fee -- \$35.00 (Make check out to: City of Anamosa)

[Signature] 8/6/25
Fire Chief (or designee) Date
Phone: 319-462-4434 for appointment

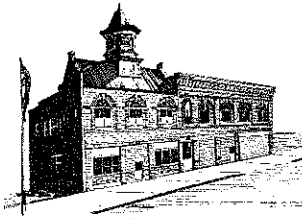
JONES COUNTY ENVIRONMENTAL HEALTH DEPARTMENT: (If applicable)

The above mentioned structure and business is in compliance with the Jones County Board of Health Regulations.

[Signature] 8/6/2025
Jones County Environmental Health Official Date
Phone: 319-462-4715 for appointment

PLEASE RETURN FORM TO KAYLEE AT CITY HALL WHEN COMPLETED

Received at City Hall _____ for the _____ Council Meeting



City of Anamosa

107 South Ford Street
Anamosa, Iowa 52205
Kaylee Palmer, Deputy City Clerk
(319) 462-6055, Ext 301
Email: kaylee.palmer@anamosa-ia.org

LIQUOR LICENSE RENEWAL OR NEW APPLICATION

ALCOHOL COMPLIANCE TRAINING CERTIFICATION

Name of Applicant: THOU ART GALLERY
Trade Name (DBA): THOU ART GALLERY
Street Address: 106 E MAIN ST
Phone (Business): 319-821-1424 Home (or cell): 319-325-5160

As per Ordinance No. 898 adopted by the Anamosa City Council on the 9th day February, 2015 and enacted on the 19th day of February, 2015, all persons involved in the selling, serving or dispensing of alcoholic beverages shall participate in and complete a free alcohol training program (in person or online) offered by the Iowa Alcoholic Beverage Division's approved training, the Anamosa Police Department or it's designee. All persons required to complete training shall do so within ninety (90) days of the date on which the person becomes subject to the training requirement (date of hire or enactment of this ordinance). If such training is not offered within the ninety days, the person subject to the requirements of this ordinance shall notify the Anamosa Police Department of that fact and the date upon which the employee can complete the required training. All persons completing the training required by this section shall maintain active certification. Approval of liquor license applications is contingent on all servers/sellers completing the required training within the 90 day timeframe mentioned above. If a business fails a compliance check, all servers/sellers who do not hold the in-person certification must complete the in-person classroom training with the Anamosa Police Department or it's designee within 90 days of the violation.

I, KC Wortman, the owner or authorized person of the liquor license applicant (business) stated above, have read the above ordinance statement requiring that all persons working at the business as of this date, have either met the requirement for Alcohol Compliance Training or has notified the Anamosa Police Department of when the person can complete the required training.

KC Wortman
Owner or Authorized Person

7-5-25
Date

KC WORTMAN
Printed Name of Owner or Authorized Person

OWNER
Title

CITY OF ANAMOSA
APPROVAL FORM FOR LIQUOR AND BEER LICENSE APPLICATIONS

Class _____ Beer/Liquor
Sunday: Yes _____ No _____
New/Renewal/Amended
Circle Appropriate Info.

NAME OF APPLICANT: THOU ART GALLERY
TRADE NAME (DBA): THOU ART GALLERY
STREET ADDRESS: 106 E MAIN ST, ANAMOSA
PHONE (BUSINESS): 319-821-1424 **HOME (OR CELL):** 319-325-5160

The undersigned have by the signatures of the officials noted below, certify that the above mentioned structure conforms to all laws within the jurisdictional limits of enforcement of said officials and may receive approval of this application.

ANAMOSA POLICE DEPARTMENT

The above named applicant(s) is approved by this department to have a beer and/or liquor license at the above location.

[Signature] City Administrator 8/6/25
Police Chief Date
Leave form at City Hall after Fire and Health signatures are complete

ANAMOSA FIRE DEPARTMENT: Fire Inspection Fee -- \$35.00 (Make check out to: City of Anamosa)

[Signature] 8/6/25
Fire Chief (or designee) Date
Phone: 319-462-4434 for appointment

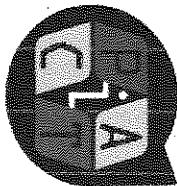
JONES COUNTY ENVIRONMENTAL HEALTH DEPARTMENT: (If applicable)

The above mentioned structure and business is in compliance with the Jones County Board of Health Regulations.

[Signature] 8/6/2025
Jones County Environmental Health Official Date
Phone: 319-462-4715 for appointment

PLEASE RETURN FORM TO KAYLEE AT CITY HALL WHEN COMPLETED

Received at City Hall _____ for the _____ Council Meeting



Certificate of Completion

Awarded to:

KC K Wortman

For completion of:

Iowa Program for Alcohol Compliance Training

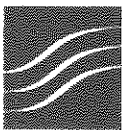
Date of completion: Aug 16, 2024

Expires on: Aug 16, 2026

Certificate No: 245170

Thank you for participating in the Iowa Program for Alcohol Compliance Training and for partnering with the Iowa Alcoholic Beverages Division to not sell alcohol to Iowa's minors.

State of Iowa
Alcoholic Beverages Division
1918 SE Hulsizer Road,
Ankeny, IA 50021



ALCOHOLIC
BEVERAGES
DIVISION
State of Iowa


Stephen Larson
Administrator

CITY OF ANAMOSA
NOISE / STREET CLOSURE PERMIT APPLICATION

Date: 7-28-25

☐ NOISE PERMIT
☒ STREET CLOSURE PERMIT

Applicants Name: Arts Court

Applicant's Address: 107 N garnavillo

Applicant's Phone: 319-821-1424

Event Location/Address: from garnavillo + Main to end of 107 parking lot

Detailed Description of Event:
Fun family event with live music, food + art vendors, games for kids + beer tent

Date of Event: 8-31-25 Time Period of Event: Set up Noon-9 event 3-9

TYPE OF NOISE VARIANCE REQUESTED:

☒ MUSICAL INSTRUMENT

☒ SOUND EQUIPMENT

STREET CLOSURE INFORMATION (If Applicable)

Street(s) to be affected: garnavillo from Main to 107 parking lot

Starting at intersection(s) of: Main + garnavillo

End at intersection(s) of: parking lot at 107 garnavillo and alley
Please attach a detailed map/drawing of area.

Barricades Needed? Y/N How many: 8 Type: _____

Barricades are to be picked up at the City Shop area by 12:00 p.m. Noon on Friday prior to weekend event. Barricades are to be returned to the City Shop area by 12:00 p.m. Noon on the Monday following a weekend event.

COPY OF ORDINANCE GIVEN TO APPLICANT? _____

COUNCIL APPROVED ON: _____
AMOUNT OF FEE PAID: _____

DISTRIBUTE COPIES TO: _____ * APPLICANT _____ * POLICE DEPT.
_____ * PUBLIC SERVICES _____ * FIRE DEPT.

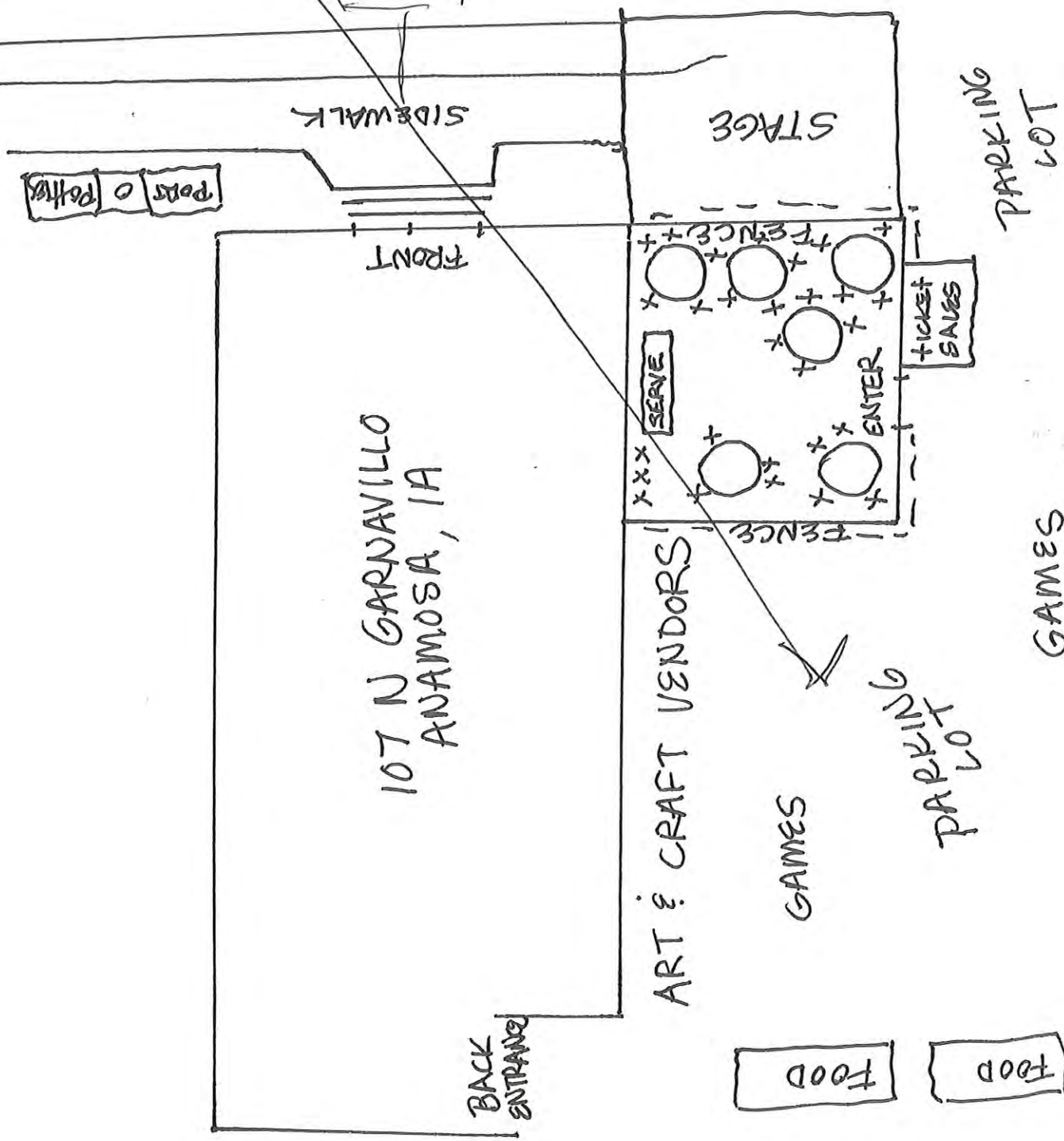
FOOD TRUCK STREET
BLOCK STREET

ART + CRAFT VENDORS • ART & CRAFT VENDORS

KIDS
ART
ACTIVITIES

CLOSED
STREET
GAMES

BIG
TENT
DANCING



107 N GARNAVILLO
ANAMOSA, IA

ART & CRAFT VENDORS

GAMES

PARKING
LOT

GAMES

ART & CRAFT VENDORS • ART & CRAFT VENDORS •
CLOSED

July 16, 2025

Anamosa City Administrator Jeremiah Hoyt,

Hi, I am Brenda Ketelsen, who has a Child Care business at 902 South Main Street. Tim Hollett and I have been conferring with each other about putting up a couple ***"Slow Down Children at Play"*** signs in my neighborhood.

There are approximatley 15 kids playing on this street area, plus I am a "bus stop" for Anamosa schools 4 times a day. These signs would be a great help in making drivers aware of children in our neighborhood and hopefully slowing down the traffic. If needed I couple provide signatures from the neighborhood supporting displaying these ***"Slow Down Children at Play"*** signs.

I would like to see one on each side of my residence. A sign displayed at the corner of South Main Street / W. Hickory Street and a sign at the corner of South Main Street / W. Mill Street would be appreciated!

Thank You,

Brenda Ketelsen
902 South Main Street
Anamosa, IA 52205



RESOLUTION NO. 2025-48

RESOLUTION APPROVING THE PLACEMENT OF TWO “CHILDREN AT PLAY” SIGNS IN THE PUBLIC RIGHT-OF-WAY, ON S. MAIN STREET, AT THE CORNER OF S. MAIN STREET/W. HICKORY STREET AND S. MAIN STREET/W. MILL STREET, IN ANAMOSA, IOWA.

WHEREAS, a resident of Anamosa has an in-home childcare business at 902 S. Main Street and has requested that “Children At Play” signs be placed on S. Main Street, at the corners of S. Main Street/W. Hickory Street and S. Main Street/W. Mill Street; and,

WHEREAS, this matter discussed by the Anamosa City Council at the July 28, 2025 regular City Council meeting; and,

WHEREAS, the Council motioned, and seconded, that a Resolution to approve these signs be on a subsequent City Council agenda.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF ANAMOSA, IOWA, that the City of Anamosa does hereby approve the placement of two “Children At Play” signs in the Public Right-of-Way, on S. Main Street, at the corners of S. Main Street/W. Hickory Street and S. Main Street/W. Mill Street, in Anamosa, Iowa.

Councilmember _____ introduced this Resolution and moved for its adoption.

Councilmember _____ seconded the motion to adopt.

The roll was called and the following indicates the result of the vote.

COUNCIL MEMBER	AYES	NAYS	ABSENT	ABSTAIN
CRUMP				
K. SMITH				
TUETKEN				
D. SMITH				
WEIMER				
GOMBERT				

PASSED AND APPROVED this 11th day of August, 2025.

ROD SMITH, MAYOR

ATTEST:

JEREMIAH HOYT, CITY ADMINISTRATOR

June 5, 2025

CITY OF ANAMOSA
107 S FORD ST
ANAMOSA IA 52205

SUBJECT: **Letter of Non-Compliance: Violation of 567 IAC 64.3 Permit to Operate**
Anamosa WWTP Inspection
NPDES Permit #5307001

Enclosed is the report of the recent inspection of the above facility conducted by Field Office 1 staff.

We believe you will find the report self-explanatory and strongly encourage you to take action on the requirements and recommendations listed at the end of the report. A Letter of Non-Compliance is being issued due to the failure to comply with the NPDES permit.

If you have any comments or questions about the inspection or report, please contact me at 563-927-2640 ext 308 or michele.smith@dnr.iowa.gov.

The cooperation and assistance provided by Steve Agnitsch, Rachel Frank, and Jake Simmen during the inspection is appreciated.

Sincerely,

Michele Smith

Digitally signed by Michele
Smith
Date: 2025.06.05 10:08:04 -05'00'

Environmental Specialist Senior, Field Office #1

Encl:

cc: Steve Agnitsch, via email steve.agnitsch@anamosa-ia.org
53 WW Anamosa ins 052825 mas

Iowa Department of Natural Resources
Wastewater Treatment Facility Inspection Form

NPDES Permit #: 5307001

Page 1

FACILITY INFORMATION

Facility:	Name: Anamosa Wastewater Treatment Plant	Plant Grade: WW3
	Responsible Authority/Owner: City of Anamosa	
Responsible Operator:	Address: 107 S. Ford St.	Phone: 319-558-8335
	City: Anamosa	State: IA Zip: 52205
	Name: Steve Agnitsch	Grade: WW3 Certification Number: 10394
	General Description: Wastewater from the city of Anamosa is treated by an Aero-Mod activated sludge system and UV disinfection.	
Design Capacity:	Average MGD: 1.2500	Maximum MGD: 2.2500
	Pounds BOD/Day: 1519	PE (BOD): 9,096
Now Treating:	Average MGD: 0.806	Maximum MGD: 1.135 (July 2024)
	Pounds BOD/Day: 1171	PE (BOD): 7012
Receiving Stream:	Period Reviewed: 5/1/2023– 04/30/2025	Population Served: 5,450 (2020 Census)
	Wapsipinicon River	

INSPECTION INFORMATION

Inspection:	Date and Time of Inspection: 05/28/2025 @ 0930	Purpose: Routine Compliance Insp.
Persons Interviewed:	Date of Last Inspection: 05/31/2023	
	Name Steve Agnitsch, Superintendent, OIC	Name Rachel Frank, Operator
	Name Jake Simmen, Operator	Name

NPDES PERMIT COMPLIANCE SUMMARY

Self-Monitoring: Effluent Limitations: Samples this Inspection:	Operation Reports Submitted: ☒ Sat. ☐ Marg.* ☐ Unsat.*	Required Data on Reports: ☒ Sat. ☐ Marg.* ☐ Unsat.*	Testing Adequacy: ☒ Sat. ☐ Marg.* ☐ Unsat.*
	Self-Monitoring Results: ☐ Compliance ☒ Infrequent Non-Compliance* ☐ Significant Non Compliance*		
	Type: None	Lab Data Attached? ☐ Yes ☐ No	Results: ☐ Sat. ☐ Marg.* ☐ Unsat.*
	Visual Appearance of Effluent: Clear		
Compliance Schedule:	Visual Appearance of Receiving Stream: No impacts noted.		
	Compliance w/Schedule: ☒ Sat. ☐ Marg.* ☐ Unsat.* ☐ NA		
	Next Item Due: Complete construction, Nutrient Reduction		
	Date Due: 11/1/2025		

* Additional details in the narrative report

AUTHENTICATION

Inspector:	Name & Title: Michele Smith	Digitally signed by Michele Smith Date: 2025.06.05 10:08:23 -05'00'
	Chris Gelner	
Reviewer:	Name & Title: Chris Gelner, Environmental Specialist Senior	Date: 11/1/2025

**Iowa Department of Natural Resources
Wastewater Treatment Facility Inspection Form**

NPDES Permit #: 5307001

Page 2

FACILITY EVALUATION

Were deficiencies noted or significant observations made during the inspection?

Yes = See Comments Section for details

No = No deficiencies or significant observations were noted

Lack of Entry = Item not applicable or not observed.

Item	Yes	No	Item	Yes	No
1. Collection System			9. Sludge Handling and Disposal		
a. Operation and Maintenance	☒	☐	a. Operation and Maintenance	☒	☐
b. Physical Condition	☐	☒	b. Physical Condition	☐	☒
c. Dry Weather Capacity	☐	☒	c. Capacity	☐	☒
d. Infiltration/Inflow	☒	☐	d. Effectiveness	☐	☒
e. Bypass(es)	☒	☐	e. Final Disposal, Solids	☒	☐
2. Lift Station(s) (Collection System)			f. Final Disposal, Liquids	☐	☐
a. Operation and Maintenance	☒	☐	10. Lagoon Structures N/A		
b. Physical Condition	☒	☐	a. Maintenance	☐	☐
c. Capacity	☐	☒	b. Physical Condition	☐	☐
d. Reliability/Emergency Operation	☒	☐	c. Capacity	☐	☐
3. Industrial Waste Pre-Treatment			d. Cell Configuration	☐	☐
a. Significant Industrial Users	☒	☐	e. Storage/Drawdown Management	☐	☐
b. Waste Toxicity/ Compatibility	☐	☐	11. Flow Measurement		
c. Strength Reduction	☐	☐	a. Operation and Maintenance	☐	☒
d. Effect on Treatment Plant	☐	☐	b. Capacity	☐	☒
4. Preliminary Treatment			c. Continuity	☐	☒
a. Operation and Maintenance	☒	☐	d. Location, Method/ Effectiveness	☐	☒
b. Physical Condition	☐	☒	12. Pumping		
c. Capacity	☐	☒	a. Operation and Maintenance	☐	☒
d. Effectiveness	☐	☒	b. Physical Condition	☐	☒
5. Primary Treatment			c. Capacity	☐	☒
a. Operation and Maintenance	☐	☐	d. Reliability/ Emergency Operation	☐	☒
b. Physical Condition	☐	☐	13. Miscellaneous		
c. Capacity	☐	☐	a. Location	☐	☒
d. Sludge/Scum Removal	☐	☐	b. Odors	☐	☒
e. Effectiveness	☐	☐	c. Emergency Operation	☒	☐
6. Secondary Treatment			d. Bypass(es)	☐	☐
a. Operation and Maintenance	☒	☐	e. Equipment	☒	☐
b. Physical Condition	☐	☒	f. Buildings & Grounds	☒	☐
c. Capacity	☐	☒	g. Lab Certification	☒	☐
d. Recirculation	☐	☒	h. Other GP#1	☒	☐
e. Freezing	☐	☒	14. Staffing, Operator Certification		
f. Effectiveness	☐	☒	a. Operator, Direct Responsibility	☐	☒
7. Final Settling			b. Shift Operator(s)	☐	☐
a. Operation and Maintenance	☒	☐	c. General Staffing	☐	☒
b. Physical Condition	☐	☒	15. Supplementary		
c. Capacity	☐	☒	a. Permit Availability	☐	☒
d. Effectiveness	☒	☐	b. Operation Reports Availability	☐	☒
8. Supplementary Treatment - UV			c. Equipment Records Maintenance	☐	☒
a. Operation and Maintenance	☒	☐	d. Previously Noted Deficiencies	☐	☐
b. Physical Condition	☐	☒	e. Improvements	☐	☐
c. Capacity	☐	☒	f. Domestic/Industrial Growth	☐	☐
d. Effectiveness	☐	☒	g. Recommendations	☒	☐
			h. Required Actions	☒	☐

Iowa Department of Natural Resources
Wastewater Treatment Facility Inspection Form

Facility Name: Anamosa WWTP

Page 3

NPDES Permit #: 5307001

Inspection Date: 05/28/2025

INTRODUCTION

A compliance evaluation inspection was conducted at the Anamosa Wastewater Treatment Facility on May 28, 2025. The inspection involved a review of the facility records, discussions with the facility operators listed above, a walk through of the treatment facility, and a visit to Tower lift station. The purpose of the inspection was to determine the compliance status of the facility.

Anamosa wastewater is pumped from five lift stations throughout the city into the main treatment plant pumping station. Wastewater is treated by a spiral screen, a grit cyclone, a BioP tank, a quad train Aeromod activated sludge plant, and is disinfected with UV from March 15 – November 15. Effluent is then discharged to the Wapsipinicon River at Outfall 003. An effluent pumping station is available, if needed, based on the level of the Wapsipinicon River.

Waste activated sludge from the Aeromod digester tanks is being run through a belt filter press. Pressed sludge is stored for up to a year in a covered building on site (the old trickling filter) prior to land application.

NPDES PERMIT COMPLIANCE SUMMARY

The discharge monitoring reports (DMRs) were reviewed for the reporting period from May 1, 2023 through April 30, 2025.

Self-monitoring – The DMRs were submitted regularly and on time.

Design Capacity – This system did not exceed flow design capacity during the review period. However, design capacities for BOD5, TKN and TSS were exceeded multiple times during the 24-month review period.

- BOD5 was exceeded during five months. The design load is 1519 lbs/day. The average during the review period was 1170 lbs/day.
- TKN was exceeded during seven months. The design load is 245.00 lbs/day. The average during the review period was 223 lbs/day.
- TSS was exceeded during 22 months. The design load is 1179 lbs/day. The average during the review period was 2680 lbs/day. Staff are aware of these exceedances and are actively working to determine the cause. At this time, it appears it may be an issue within the plant itself, rather than an actual loading issue. So far, the following activities have not changed the high TSS loading levels
 - Sample collection location changes. Sample collected after the screen
 - Composite sampler hose change. Increased distance of hose from the bottom of the channel
 - Cleaning out channel to remove sediment
 - Screen is being replaced and will be installed in June 2025.

Effluent Limitations - During the review period the facility appears to be in general compliance with the effluent limitations with the exceptions noted in the chart below.

Effluent Limit Violations 5/1/2023 - 4/30/2025

ANAMOSA CITY OF STP - 5307001

Anamosa EPA #:1A0025895		AVERAGE - #/100 ML		AVERAGE - MG/L		DAILY MAXIMUM - MG/L	
		Limit	DMR	Limit	DMR	Limit	DMR
Outfall: 001							
10/2023	NH3-N			2.8	3.81375		
12/2023	O&G			10	13.9		
2/2024	O&G			10	10.55	15	15.8
7/2024	E. COLI	126	922.919647				
8/2024	NH3-N			1	1.24125		
	O&G			10	14.3		

The facility met the 85% removal requirement for BOD. The average BOD removal over the entire review period was 96.87%. The monthly average ranged from 92.71% to 100%.

The facility met the 85% removal requirement for TSS. The average TSS removal over the entire review period was 99.27%. The monthly average ranged from 98.03% to 99.70%.

It is recommended that all operators read and become familiar with the NPDES permit and all the Standard Conditions within. Below is a summary of two Standard Conditions to note.

- **Standard Condition #13** The permittee shall report orally within 24 hours when there is an exceedance of a daily maximum limit (concentration and/or mass) listed in their NPDES permit with the exception of pH. A written submission that includes a description of times, whether the non-compliance has been corrected or the anticipated time it is expected to continue; and the steps taken or planned to reduce, eliminate, and prevent a reoccurrence of the non-compliance must be submitted fo1.notify@dnr.iowa.gov within five days of the occurrence. Violations of permit limits for acute toxicity, mercury, oil & grease and ammonia nitrogen shall be reported within 24 hours from the time you became aware of the circumstance.
- **Standard Condition #14** The permittee shall report all instances of non-compliance of their NPDES permit limitations, not already reported under Standard Condition #13, at the time of submittal of their DMR. You shall give advance notice to the appropriate regional field office of the department of any planned activity which may result in non-compliance with the permit requirements. Violations of permit limits for pH, CBOD₅, TSS, E. coli, annual average nitrogen and the lack of 85% CBOD₅ and TSS removal shall be documented in the comment section of your monthly DMRs.

FACILITY EVALUATION

1.a,d,e: COLLECTION SYSTEM

Anamosa owns a camera trailer and jet truck to clean and televise at least 20% of the collection system each year. Problems encountered are repaired or scheduled for repair, with the goal to have the entire collection system televised every five years. The operators noted that they do not have enough available personnel to consistently meet this goal.

During the review period for this inspection, three bypasses were reported. Please be reminded that all bypasses and basement backups must continue to be verbally reported within 24 hours and a written report must be submitted to fo1.notify@dnr.iowa.gov within five days of the occurrence. Standard Condition #19 can provide more information.

As a reminder, 567 IAC 63.6(1)(455B) states, "Bypasses from any portion of a treatment facility or from a sanitary sewer collection system designed to carry only sewage are prohibited." As such, this office may pursue formal enforcement action following bypass events. A Notice of Violation was issued on April 1, 2024 for the bypass that occurred from the main lift station on March 27, 2024.

A 3 MG equalization basin is currently under construction with an anticipated completion date in December 2025. This should address the majority of bypass events that occur at the headworks. However, as I/I must continually be addressed in the system it is recommended that the city continues to identify and eliminate source of I/I. These sources include, but are not limited to, roof drains, basement sumps, storm sewer interconnections, leaking manholes, and leaking sewer pipes.

2.a,b,d: LIFT STATIONS

The collection system includes five lift stations. Lift station floats are cleaned weekly, trash baskets are cleaned monthly, and all lift station pumps are pulled and gone through annually.

The 2nd Street and Rosemary lift stations have stand-alone diesel generators for emergency power in the event of power failure. The remaining lift stations are equipped with the ability to connect to a portable generator. The city has generators available. The lift stations all have visual/audio alarms and are equipped with autodialer communication systems to notify operators of high-water levels and power failure events. The 2nd Street lift station has a spiral screen grit unit for solids removal.

The Tower lift station was visited during this inspection and was showing visible signs of concrete spalling and breakage in a few areas. Staff noted they are hoping to be able to make plans to replace this aging lift station.

3.a: INDUSTRIAL WASTE PRE-TREATMENT

Following the inactivation of the Anamosa State Penitentiary Treatment Agreement, the city does not have any SIUs on the NPDES permit. An industrial user questionnaire was given to the operator for future use. As a reminder, a SIU is: 1) a facility that discharges an average of 25,000 gallons per day or more of process wastewater excluding sanitary, noncontact cooling and boiler blowdown wastewater; 2) contributes a process waste stream which makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the publicly owned treatment works; 3) is subject to Categorical Pretreatment Standards under 40 CFR 403.6 and 40 CFR Chapter I, Subchapter N; or 4) has a reasonable potential to adversely affect the operation of, or effluent quality from, the publicly-owned treatment works or for violating any pretreatment standards or requirements. It is recommended that an industrial user survey be conducted at least once during each permit cycle for businesses that may fall under any items 1-3 listed above. Once the surveys are completed they should be sent to Julie Faas at julie.fass@dnr.iowa.gov for review.

4.a: PRELIMINARY TREATMENT

Preliminary treatment consists of a spiral mechanical screen unit for solids removal located at the headworks of the plant as well as an aerated grit chamber. Solids are mechanically removed and deposited into a trash bin for disposal at the Dubuque County Landfill. As a reminder, grit and screenings (solids from the headworks and lift stations) must be stabilized before being deposited into a landfill. Bags of hydrated lime were available on site.

6.a: SECONDARY TREATMENT

This treatment plant does not provide primary treatment. Secondary treatment is provided by an Aero-Mod activated sludge system, which consists of four trains of first stage aeration, second stage aeration, clarifiers, and aerobic digestion.

Construction permit 2019-0296-S approved improvements for phosphorus removal. This included a 70,000-gallon fermentation tank located after grit removal and prior to the selector tank. All influent enters this tank (the BioP basin).

8.a: SUPPLEMENTARY TREATMENT

The treatment plant is equipped with a non-contact ultraviolet (UV) disinfection system with two banks in series. The system is housed in a building and automatically turns on UV lights based on flow.

9.a,e: SLUDGE HANDLING & DISPOSAL

Waste activated sludge is removed from the Aeromod sludge tanks and is being sent to the belt filter press multiple times each week. Decant water from the thickening process is sent back into the influent pumping station. This decant water was discussed as a possible source of TSS loading but the operators stated that this was already investigated and shown not to affect the results. The operators noted that they are planning to replace the belt filter press in the near future.

The five-year sludge plan was available and appeared complete. This plan should be updated annually. Even though the process of developing the plan, as well as removing and applying the sludge to nearby fields, is contracted out, the operators were reminded they are the responsible party to ensure Chapter 67 is met.

13.c,e,f,g,h:MISCELLANEOUS

Emergency operation - A diesel emergency generator is available and is tested monthly, however there are issues with a transfer switch. A replacement is forthcoming.

Equipment – The composite samplers were inspected and the operators were reminded to verify and record the temperature of the interior during the sampling process.

Buildings and Grounds – During the previous inspection it was noted that there were issues with the unused chlorine contact chamber. This was removed in September 2023.

Lab certification – This facility is certified (Lab #188) to run BOD, CBOD and TSS. The remainder of the testing requiring a certified lab is done at QC Analytical Services (Lab #113).

General Permit #1 - Wastewater treatment works treating domestic sewage or other sewage with a design flow of 1.0 MGD or more are considered to be engaging in "Industrial Activities" and are, therefore, subject to the stormwater discharge application requirements. General Permit #1 (Authorization #6280-6090) has been applied for and expires 03/10/2029. On 05/28/2025, a staff member from this office reviewed the GP1 requirements and associated records, as well as a physical inspection of the facility. No issues were noted.

Cybersecurity - Cybersecurity is important and the Iowa DNR will remain a conduit of information between the EPA, CISA, and Iowa's local wastewater operators and systems. The following resources are available for cybersecurity assistance:

- Cybersecurity & Infrastructure Security Agency's Free Cybersecurity Services and Tools webpage (https://www.cisa.gov/resources-tools/resources/free-cybersecurity-services-and-tools?utm_medium=email&utm_source=govdelivery)
- EPA's Cybersecurity for the Water Sector webpage (https://www.epa.gov/waterresilience/epa-cybersecurity-water-sector?utm_medium=email&utm_source=govdelivery)
- EPA's Free Cybersecurity Evaluation Program, which will conduct a cybersecurity assessment. The assessment will follow the checklist in the guidance on Evaluating Cybersecurity which will then generate a report that will highlight gaps in cybersecurity (https://www.epa.gov/waterresilience/forms/epas-water-sector-cybersecurity-evaluation-program?utm_medium=email&utm_source=govdelivery).

14.a,c:STAFFING, OPERATOR CERTIFICATION

The following staff are associated with the treatment facility:

ID#	Name	Grade	Designation
10394	Steven Agnitsch	WW3	Operator-In-Charge
10337	Robert Young	WW2	Regular
12257	Curtis Paustian		Regular
12521	Rachel Frank	WW2	Regular
13183	Jacob Simmen	WW1	Regular

It was noted that none of the staff have obtained their voluntary collection system certification that is available through the IAWEA association. This association offers training at an annual conference and is specifically focused on providing educational opportunities related to collection systems. Additional information about this can be found on their website at <https://www.iawea.org/collection-systems-2/>. Although this is not a requirement, it is recommended that collection specific training be obtained as staff are responsible for the Anamosa collection system, in addition to the treatment plant.

As a reminder, Standard Condition #9, Proper Operation and Maintenance, requires that a sufficient number of staff, adequately trained and knowledgeable in the operation of your facility, shall be retained at all times. Although discussions with staff demonstrated they are quite knowledgeable in the operation of the system, some maintenance activity goals associated with the collection system are not being met due to a lack of staff availability.

It was apparent during the inspection that great efforts have been made to organize and document activities. The large wall calendar that listed sampling days and other planned maintenance activities demonstrated the efforts the staff were making to stay organized and compliant.

SUMMARY

The city of Anamosa wastewater treatment facility was found to be in infrequent non-compliance with effluent limits during the review period, but did not meet design load limits most months. Operators should continue looking into this issue and make any applicable changes based on their findings. The new EQ basin under construction should help to reduce bypassing.

REQUIREMENTS

1. Comply with all effluent limitations required by the NPDES permit [567 IAC 64.3(1)].
2. Comply with influent design capacity limitations specified in Construction Permit Number S2006-0197 and page 12 of the NPDES permit [567 IAC 62.1(7)].
3. Cease bypassing and basement backups in the collection system (567 IAC 63.6).
4. Review staffing levels.

RECOMMENDATIONS

1. Read and become familiar with all aspects of the NPDES permit including the standard conditions.
2. Conduct a significant industrial user survey at least once with each permit cycle.
3. Review collection system maintenance and improvement goals and update, as needed. Voluntary collection system training / certification may be beneficial.
4. Encourage operators to obtain their initial / higher operator certification grades.
5. Continue to implement a program to identify and eliminate sources of infiltration and inflow.
6. Consider replacing / repairing the Tower lift station.

DNR Sanitary Survey - Loading Exceedances Discussion

From Jindrich, Haley <hjindrich@hrgreen.com>

Date Thu 7/24/2025 3:09 PM

To Steve Agnitsch <steve.agnitsch@anamosa-ia.org>

 4 attachments (566 KB)

ltr_20250724_2025_WWTP_Anamosa_Load Exceedances.pdf; Anamosa - Process-Clarifier Calcs - 06-11.pdf; Anamosa - Tankage Calcs - 06-11.pdf; Anamosa - Aeration Calcs - 09-10.pdf;

Hi Steve,

Attached is a short memo I put together when looking into the WWTP influent load exceedances.

To summarize in as few words as possible:

- You're seeing influent load exceedances because the City's per capita loads are much higher than the DNR standard values that were used in design. The per capita loads could be tracked down to a point source or could remain a mystery as we've seen for some other towns.
- According to Aero-Mod, the plant has a higher capacity than what was permitted (see attached design calcs). I cannot figure out why it was permitted for so much less, but ultimately, I don't think the DNR will issue a Notice of Violation unless you're having effluent violations.
- I also commented on the Treatment Agreement because I couldn't help but notice that the prison is allowed to contribute way more load than they should be based on their inmate population. Probably not something requiring action unless it becomes a problem down the line.

Feel free to give me a call to talk through this if you have any questions.

Haley Jindrich, PE

Lead Engineer – Water/Wastewater

HR Green® | Building Communities. Improving Lives.



8710 Earhart Lane SW | Cedar Rapids, IA 52404-8947

Main 319.841.4000 | Fax 713.965.0044 | Direct 319.841.4304 | Cell 319.361.8637

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8710 Earhart Lane SW
Cedar Rapids, IA 52404
Main 319.841.4000 • Fax 713.965.0044
HRGREEN.COM

July 24, 2025

Steve Agnitsch
Utilities Superintendent
1210 Walworth Ave.
Anamosa, IA 52205

Re: DNR 2025 Sanitary Survey - WWTP Loading Exceedances

Dear Steve,

The DNR conducted a sanitary survey on May 28, 2025 and noted that the City of Anamosa's wastewater treatment plant (WWTP) had numerous influent load exceedances for BOD₅, TKN, and TSS between May 1, 2023 and January 1, 2025. HR Green has evaluated potential causes for these exceedances and the findings are listed below.

1. According to the July 2008 Facility Plan Amendment by Snyder and Associates, the 2030 design population was 6,994 people. This design population is 16% higher than the current estimated population of 5,845 people (2024 population estimate per U.S. Census Bureau). However, the City's per capita load for BOD, TSS, and TKN is significantly higher than DNR standard values that were used in the design load projections, resulting in design loading values that are too low.

Historical per capita loads are shown in Table 1, in comparison to DNR standard per capita loads. The City's per capita loads appear to be increasing with time, but the source of the high loads is unknown. According to the City, there have not been any new industries or point sources which could explain the high strength loads. Recycling centers, breweries, restaurants, etc. could be potential sources and could potentially be sampled in the collection system. A high per capita load would also result if Anamosa sees an influx of population during the day (not full-time residents of the city).

Historical BOD, TSS, and TKN loads are summarized in Figures 1-3 in Attachment A.

Table 1: Per Capita Loading

Wastewater Parameter	Historical Per Capita Loading 1998-2009	Historical Per Capita Loading ¹ 2022-2025	DNR Standard Per Capita Loading
BOD, lb/cap-day	0.23	0.30	0.17
TSS, lb/cap-day	0.16	0.55	0.20
TKN, lb/cap-day	N/A	0.049	0.035

1. Per capita loadings include the State Penitentiary inmate population (app. 1,166).

2. HR Green had preliminary discussions with Aero-Mod regarding the sizing of the WWTP. Aero-Mod indicated that the plant was designed for much higher loads than what is listed on the WWTP NPDES permit. A comparison of these loads is provided in Table 2. Historical influent BOD and ammonia loads are less than the Aero-Mod design capacity. Historical TSS is approximately 8% higher than the Aero-Mod design capacity but could be due to unrepresentative sampling (sample location, organic shocks, etc.).

The City may be able to re-rate the existing WWTP for the capacities listed in the "Aero-Mod Design Values" column in Table 2. This would require a NPDES permit amendment, Antidegradation Alternatives Analysis, and potentially a Facility Plan submittal to the DNR. Further investigation is needed to confirm if the plant can be re-rated. The DNR will not likely issue a Notice of Violation for influent load exceedances and the WWTP appears to be consistently complying with effluent limits.

Table 2: Design Capacity vs. Rated Capacity

Wastewater Parameter	Aero-Mod Design Values	NPDES WWTP Capacity	2022-2025 Historical Loads (30-Day Max Average)
BOD, lbs/day	3,065	1,519	1,960
TSS, lbs/day	3,371	1,179	3,646
NH3, lbs/day	365	245	326

- The State Penitentiary closed their wood and metals shop around March 2022 and was removed from the City's NPDES permit as a Significant Industrial User (SIU). As a result, the penitentiary's effluent data is no longer included in monthly MOR submittals to the DNR. The City collects weekly samples near the State Penitentiary for internal monitoring.

The State Penitentiary has approximately 1,166 inmates and makes up nearly 18% of the total number of people in Anamosa (resident population of 5,485 people + 1,166 inmates). However, the Treatment Agreement limits allow the penitentiary to contribute between 28% and 69% of the WWTP's capacity (refer to Table 3). Based on historical data, the State Penitentiary contributes, on average, 11% of the WWTP's influent load. The City should continue to monitor the State Penitentiary's load contributions and amend the Treatment Agreement if their loads become higher overtime.

Table 3: Penitentiary Loadings

	BOD	TSS	TKN
	LBS/DAY	LBS/DAY	LBS/DAY
A) WWTP Current Influent Loads (30-Day Max Avg)	1960	3646	326
B) WWTP NPDES Design Capacity	1519	1179	245
C) Penitentiary Treatment Agreement Limits (Average)	600	810	68
Allowable Penitentiary Load vs. Design Capacity (Row C/Row B)	39%	69%	28%

Sincerely,

HR GREEN, INC.



Haley Jindrich, PE
Lead Engineer

Attachment A: Historical Loading Summary Graphs

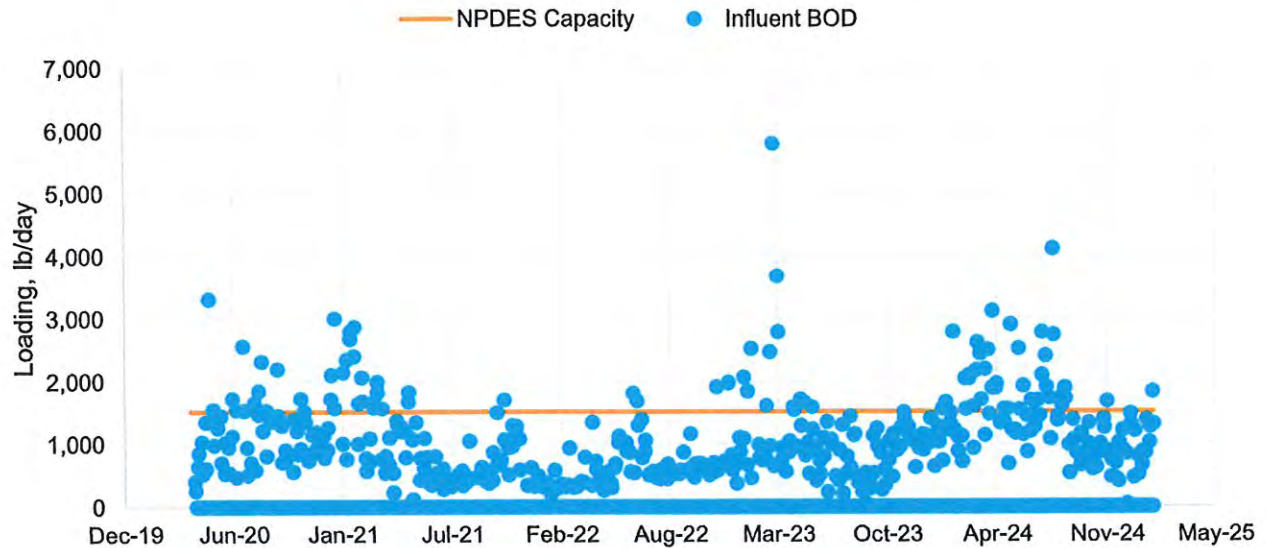


Figure 1: Historical BOD Loading

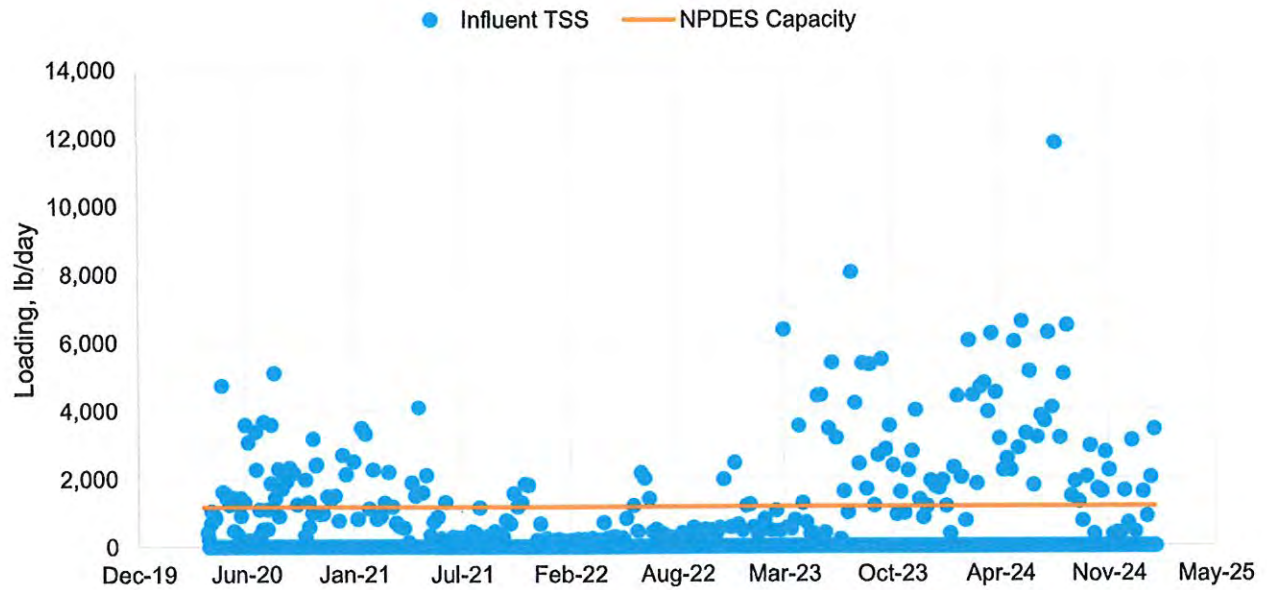


Figure 2: Historical TSS Loading

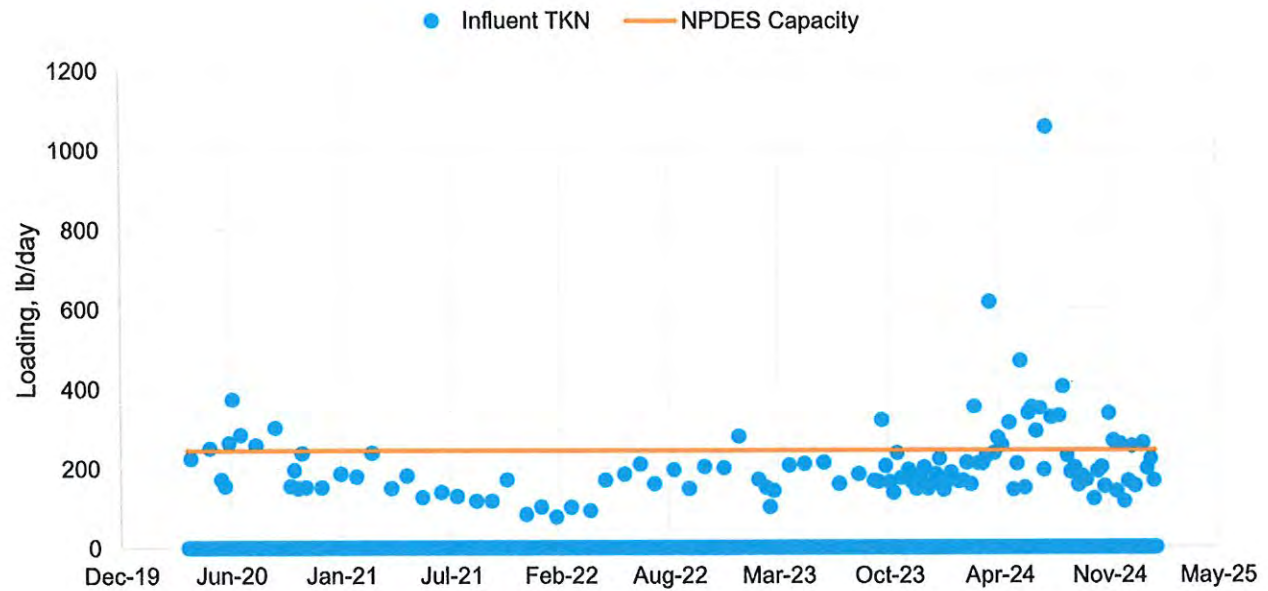
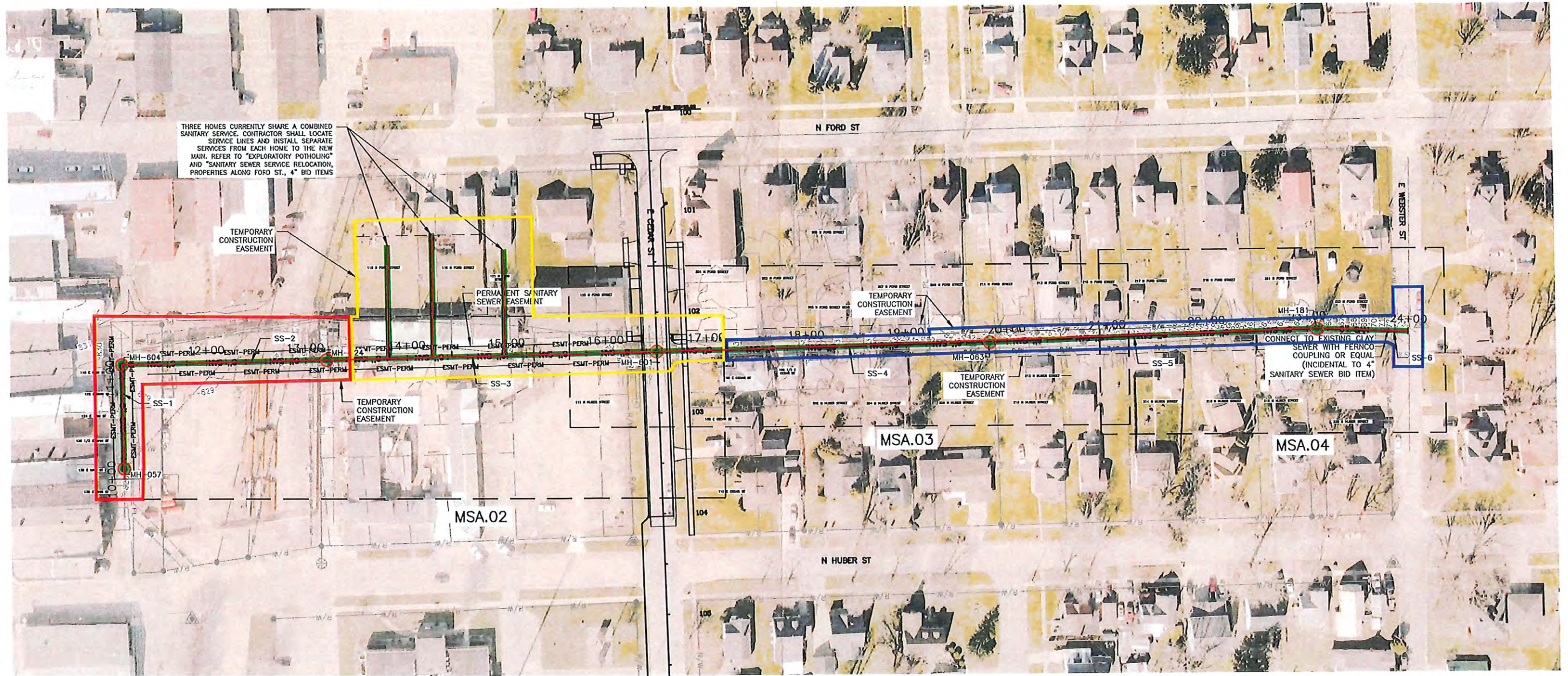
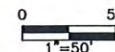


Figure 3: Historical TKN Loading



1 OVERALL KEY PLAN
SCALE: 1"=50'



Phase 1 - Sta 10+00 to 13+50
Aug 18 to Sept 12

Phase 2 - Sta 13+50 to 17+00
Sept 12 to Oct 15

Phase 3 - Sta 17+00 to 24+00
Oct 15 to Nov 26

DRAWN BY: BDB JOB DATE: 2025
APPROVED: HAJ JOB NUMBER: 220479
CAD DATE: 3/28/2025 9:06:59 AM
CAD FILE: J:\2022\220479\CAD\Drawings\MSA\MSA.01 OVERALL SANITARY PLAN.dwg

BAR IS ONE INCH ON
OFFICIAL DRAWINGS.
IF NOT ONE INCH,
ADJUST SCALE ACCORDINGLY.

NO.	DATE	BY	REVISION DESCRIPTION

HRGreen
HRGreen.com

SANITARY SEWER REPLACEMENT
CITY OF ANAMOSA
ANAMOSA, IOWA

MSA-SANITARY SEWER
OVERALL SANITARY SEWER PLAN

SHEET NO.
MSA.01

RESOLUTION NO. 2025-49

RESOLUTION TO RESCIND RESOLUTION 2025-44 AND SET THE DATE FOR A PUBLIC HEARING TO VACATE, SELL, AND CONVEY CITY OWNED RIGHT-OF-WAY (FORMER ALLEY BETWEEN 204 S. DIVISION STREET AND 610 E. 2ND STREET), PURSUANT TO SECTION 364.7 OF THE IOWA CODE.

WHEREAS, the City of Anamosa received an offer to purchase the City-owned right-of-way (former alley between 204 S. Division Street and 610 E. 2nd Street), described the south 164 feet of the vacated 24-foot wide alley running North-South in Block 32 of Scott & Skinner's Addition to the City of Anamosa; and,

WHEREAS, the Planning & Zoning Commission met on May 5, 2025 and recommended that this City-owned right-of-way be vacated contingent upon an entry/egress easement agreement; and,

WHEREAS, the City has no future plans or purpose for this City-owned right-of-way; and,

WHEREAS, a public notice of said public hearing is required to be published in the designated local paper no less than four and no more than 20 days prior to the public hearing; and,

WHEREAS, the Anamosa City Council approved Resolution 2025-44 to set the date of the Public Hearing on this matter, for August 11, 2025, but the required public notice was not provided; and,

WHEREAS, the City seeks to rescind Resolution 2025-44, and set a new date for the Public Hearing on this matter.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF ANAMOSA, IOWA, that the City of Anamosa City Council does hereby rescind Resolution 2025-44 and set August 25, 2025 at 6:00 p.m. as the date and time for the public hearing to be held at the Anamosa Library and Learning Center, in Anamosa, Iowa.

FURTHERMORE, the Council does hereby direct City personnel to proceed with the publication of said public notice in accordance with the State Code of Iowa.

Councilmember _____ introduced this Resolution and moved for its adoption.

Councilmember _____ seconded the motion to adopt.

The roll was called and the following indicates the result of the vote.

COUNCIL MEMBER	AYES	NAYS	ABSENT	ABSTAIN
CRUMP				
K. SMITH				
TUETKEN				
D. SMITH				
WEIMER				
GOMBERT				

PASSED AND APPROVED this 11th day of August, 2025.


ROD SMITH, MAYOR

ATTEST:


JEREMIAH HOYT, CITY ADMINISTRATOR



Multi-Jurisdictional Hazard Mitigation Plan

Jones County, Iowa



2025

Maintained By:
Jones County Emergency Management Agency

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APPROVAL AND ADOPTION





APPROVAL AND ADOPTION

As Chairperson of the Board of Supervisors for Jones County, Iowa, I hereby approve and adopt the 2025 update of the Multi-Jurisdictional Hazard Mitigation Plan for Jones County, Iowa. As needed, further revisions will be submitted to the Jones County Emergency Management Agency as described in **Section 5: Plan Implementation and Maintenance** of this plan.

Signed

INSERT NAME

Date Signed



APPROVAL AND ADOPTION

As Mayor of the City of Anamosa, Iowa, I hereby approve and adopt the 2025 update of the Multi-Jurisdictional Hazard Mitigation Plan for Jones County, Iowa. As needed, further revisions will be submitted to the Jones County Emergency Management Agency as described in **Section 5: Plan Implementation and Maintenance** of this plan.

Signed

INSERT NAME

Date Signed



APPROVAL AND ADOPTION

As Mayor of the City of Martelle, Iowa, I hereby approve and adopt the 2025 update of the Multi-Jurisdictional Hazard Mitigation Plan for Jones County, Iowa. As needed, further revisions will be submitted to the Jones County Emergency Management Agency as described in **Section 5: Plan Implementation and Maintenance** of this plan.

Signed

INSERT NAME

Date Signed



APPROVAL AND ADOPTION

As Mayor of the City of Monticello, Iowa, I hereby approve and adopt the 2025 update of the Multi-Jurisdictional Hazard Mitigation Plan for Jones County, Iowa. As needed, further revisions will be submitted to the Jones County Emergency Management Agency as described in **Section 5: Plan Implementation and Maintenance** of this plan.

Signed

INSERT NAME

Date Signed



APPROVAL AND ADOPTION

As Mayor of the City of Morley, Iowa, I hereby approve and adopt the 2025 update of the Multi-Jurisdictional Hazard Mitigation Plan for Jones County, Iowa. As needed, further revisions will be submitted to the Jones County Emergency Management Agency as described in **Section 5: Plan Implementation and Maintenance** of this plan.

Signed

INSERT NAME

Date Signed



APPROVAL AND ADOPTION

As Mayor of the City of Olin, Iowa, I hereby approve and adopt the 2025 update of the Multi-Jurisdictional Hazard Mitigation Plan for Jones County, Iowa. As needed, further revisions will be submitted to the Jones County Emergency Management Agency as described in **Section 5: Plan Implementation and Maintenance** of this plan.

Signed

INSERT NAME

Date Signed



APPROVAL AND ADOPTION

As Mayor of the City of Onslow, Iowa, I hereby approve and adopt the 2025 update of the Multi-Jurisdictional Hazard Mitigation Plan for Jones County, Iowa. As needed, further revisions will be submitted to the Jones County Emergency Management Agency as described in **Section 5: Plan Implementation and Maintenance** of this plan.

Signed

INSERT NAME

Date Signed



APPROVAL AND ADOPTION

As Mayor of the City of Oxford Junction, Iowa, I hereby approve and adopt the 2025 update of the Multi-Jurisdictional Hazard Mitigation Plan for Jones County, Iowa. As needed, further revisions will be submitted to the Jones County Emergency Management Agency as described in **Section 5: Plan Implementation and Maintenance** of this plan.

Signed

INSERT NAME

Date Signed



APPROVAL AND ADOPTION

As Mayor of the City of Wyoming, Iowa, I hereby approve and adopt the 2025 update of the Multi-Jurisdictional Hazard Mitigation Plan for Jones County, Iowa. As needed, further revisions will be submitted to the Jones County Emergency Management Agency as described in **Section 5: Plan Implementation and Maintenance** of this plan.

Signed

INSERT NAME

Date Signed



APPROVAL AND ADOPTION

As Superintendent of Anamosa Community School District, I hereby approve and adopt the 2025 update of the Multi-Jurisdictional Hazard Mitigation Plan for Jones County, Iowa. As needed, further revisions will be submitted to the Jones County Emergency Management Agency as described in **Section 5: Plan Implementation and Maintenance** of this plan.

Signed

INSERT NAME

Date Signed



APPROVAL AND ADOPTION

As Superintendent of Midland Community School District, I hereby approve and adopt the 2025 update of the Multi-Jurisdictional Hazard Mitigation Plan for Jones County, Iowa. As needed, further revisions will be submitted to the Jones County Emergency Management Agency as described in **Section 5: Plan Implementation and Maintenance** of this plan.

Signed

INSERT NAME

Date Signed



APPROVAL AND ADOPTION

As Superintendent of Monticello Community School District, I hereby approve and adopt the 2025 update of the Multi-Jurisdictional Hazard Mitigation Plan for Jones County, Iowa. As needed, further revisions will be submitted to the Jones County Emergency Management Agency as described in **Section 5: Plan Implementation and Maintenance** of this plan.

Signed

INSERT NAME

Date Signed



APPROVAL AND ADOPTION

As Superintendent of Olin Community School District, I hereby approve and adopt the 2025 update of the Multi-Jurisdictional Hazard Mitigation Plan for Jones County, Iowa. As needed, further revisions will be submitted to the Jones County Emergency Management Agency as described in **Section 5: Plan Implementation and Maintenance** of this plan.

Signed

INSERT NAME

Date Signed



APPROVAL AND ADOPTION

As Principal of Sacred Heart school, I hereby approve and adopt the 2025 update of the Multi-Jurisdictional Hazard Mitigation Plan for Jones County, Iowa. As needed, further revisions will be submitted to the Jones County Emergency Management Agency as described in **Section 5: Plan Implementation and Maintenance** of this plan.

Signed

INSERT NAME

Date Signed



APPROVAL AND ADOPTION

As Principal of St. Patricks school, I hereby approve and adopt the 2025 update of the Multi-Jurisdictional Hazard Mitigation Plan for Jones County, Iowa. As needed, further revisions will be submitted to the Jones County Emergency Management Agency as described in **Section 5: Plan Implementation and Maintenance** of this plan.

Signed

INSERT NAME

Date Signed



SECTION 1: INTRODUCTION





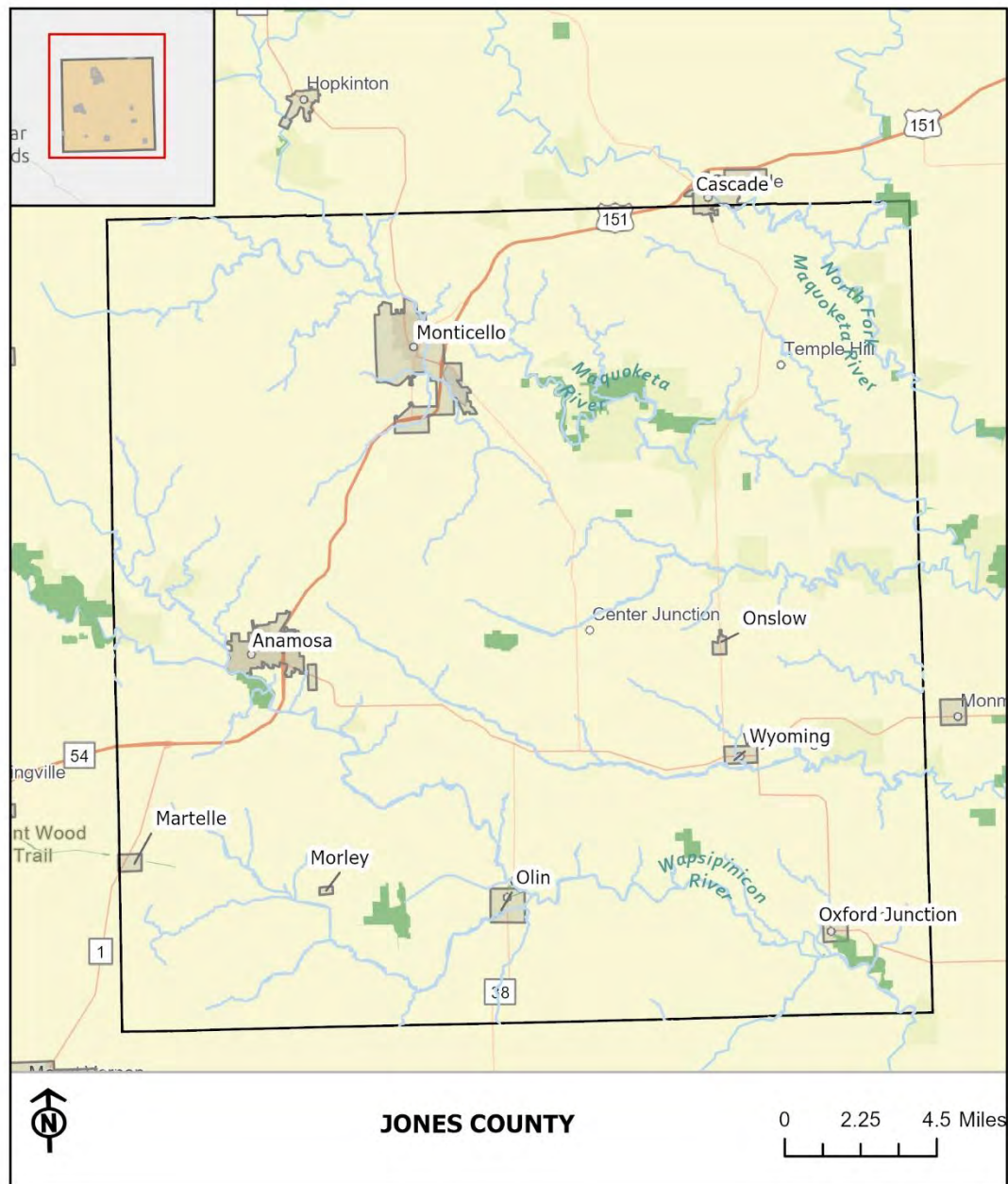
SECTION 1: INTRODUCTION

1.1 Executive Summary

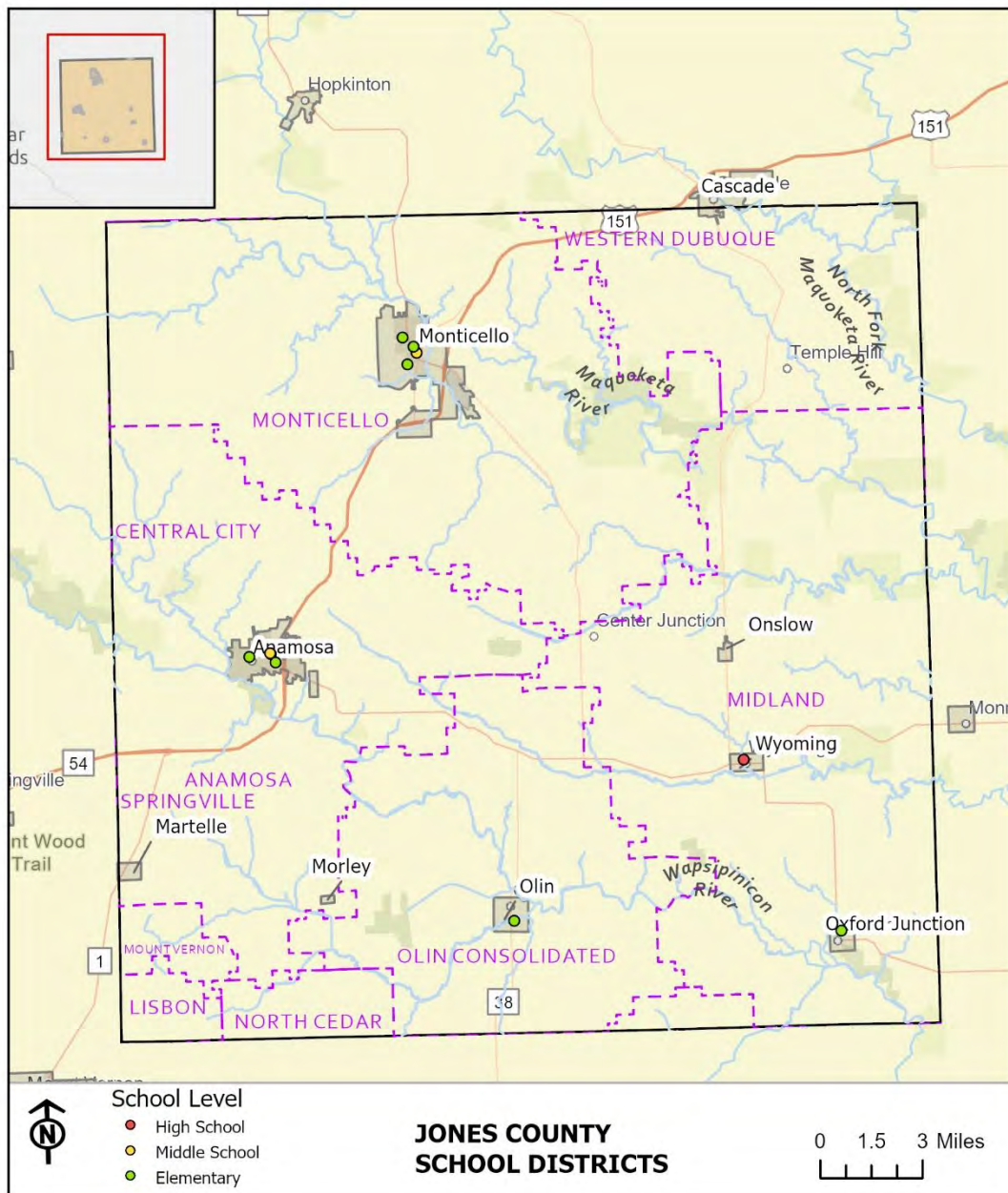
Jones County, in cooperation with certain municipalities and schools within Jones County, has prepared and adopted this 2025 update of the Jones County Multi-Jurisdictional Hazard Mitigation Plan (MJHMP). This plan has been rewritten to adjust to the needs of Jones County. All hazards have been reevaluated, applicable information added, and data not needed removed. The following certain municipalities and schools are covered in this plan in addition to Jones County:

- City of Anamosa
- City of Martelle
- City of Monticello
- City of Morley
- City of Olin
- City of Onslow
- City of Oxford Junction
- City of Wyoming
- Anamosa Community School District
- Midland Community School District
- Monticello Community School District
- Olin Community School District
- Sacred Heart School
- St. Patricks School

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Section 1: Introduction



Hazard mitigation aims to reduce or eliminate long-term risk to people and property from disasters or hazardous incidents. Studies have found that hazard mitigation is highly cost-effective, with every dollar spent on mitigation saves an average of \$6.00 in avoided future losses. The Federal Emergency Management Agency (FEMA) requires that MJHMPs be updated every five years to make the covered jurisdictions eligible for future FEMA financial assistance. This includes FEMA Hazard Mitigation Assistance (HMA) grants such as the Hazard Mitigation Grant Program (HMGP), Flood Mitigation Assistance (FMA), and Building Resilient Infrastructure and Communities (BRIC). All

Section 1: Introduction

sections of the previous mitigation plan for Jones County were reviewed and updated to address natural and human-caused hazards to save lives and reduce losses from future disasters or hazard incidents.

The 2025 Jones County Multi-Jurisdictional Hazard Mitigation Plan (also referred to as 'Plan') will serve as a blueprint for coordinating and implementing hazard mitigation policies, programs, and projects throughout the County. It provides a list of mitigation goals and related actions that may assist the participating jurisdictions in reducing risk and preventing loss from future hazard incidents. The impacts of hazards can often be lessened or even avoided if appropriate actions are taken before incidents occur. By reducing exposure to known hazard risks, communities will save lives and property and minimize the social, economic, and environmental disruptions commonly following hazard incidents.

- **Section 1: Introduction** includes this Executive Summary and an in-depth explanation of the purpose of this Plan, its background and scope, the planning process used in its development, the outreach strategy to include the whole community, and the identified planning stakeholders and partners. A broad range of public and private stakeholders, including agencies, local businesses, nonprofits, and other interested parties, were invited to participate. Public input was sought during the planning process, including an online survey and draft plan review.
- **Section 2: Whole Community Profile** describes the planning area, consisting of Jones County and certain municipality and school assets within Jones County. Updated information on demographics, social vulnerability, and changes in development are presented, along with an assessment of programs and policies currently in place to reduce hazard impacts or that could be used to implement hazard mitigation activities and identified opportunities to enhance those capabilities.
- **Section 3: Risk Assessment** identifies the hazards of greatest concern to the Plan stakeholders and describes the risk from those hazards. The information generated through the risk assessment helps the stakeholders prioritize and focus their efforts on those hazards of greatest concern and those assets or areas facing the greatest risk(s). For each hazard, the best available information on the impacts of changing weather conditions was considered. The hazards profiled in the 2025 Plan and their assessed significance are summarized in **Table 1-1** below.
- **Section 4: Mitigation Strategy** describes what the Plan stakeholders will do to reduce their vulnerability to the hazards identified in **Section 3**. It presents the goals and objectives of the mitigation program and details a broad range of targeted mitigation actions to reduce losses from hazard incidents.

Section 1: Introduction



- **Section 5: Plan Implementation & Maintenance** details how the Plan stakeholders will implement, monitor, evaluate, and update the Plan, as well as how the mitigation program will be integrated into other planning mechanisms.

HAZARDS	RANKING
Severe Winter Storm	22.05
Severe Thunderstorms	21.77
Tornadoes	19.08
Extreme Temperature	15.36
Flash Flooding	14.96
Drought	13.74
River Flooding	11.68
Communicable Disease Outbreak	9.05
Critical Infrastructure Failure	8.58
Animal/Plant/Crop Disease	8.01
Supply Chain Disruption	7.91
Cyber Incident	7.44
HazMat & Radiological	7.40
Terrorism & Mass Violence	5.77
Social Unrest	5.16
Wildfire	5.09
Earthquake	5.02
Dam Failure	4.76
Space Weather	4.02

1.2 Purpose

The following guiding principles for this Plan process guided the planning team throughout the update:

- To reduce or eliminate the long-term risks to loss of life and property damage in the jurisdictions from the full range of natural and man-made disasters.
- To identify policies, actions, and tolls for long-term implementation to reduce risk and future losses stemming from natural and man-made hazards that are likely to impact the covered municipalities and schools.
- To create communities whose activities, reflect a comprehensive commitment by government, business, non-profit organizations, and the public to eliminate or reduce risks and adverse impacts from natural, technological, and human-caused hazards.

Section 1: Introduction

Hazard mitigation is defined as a way to alleviate the loss of life, personal injury, and property damage that can result from a disaster through long- and short-term strategies. It involves strategies such as planning, policy changes, programs, projects, and other activities that can mitigate the impacts of hazards. The responsibility for hazard mitigation lies with many, including private property owners; business and industry; and local, state, and federal government.

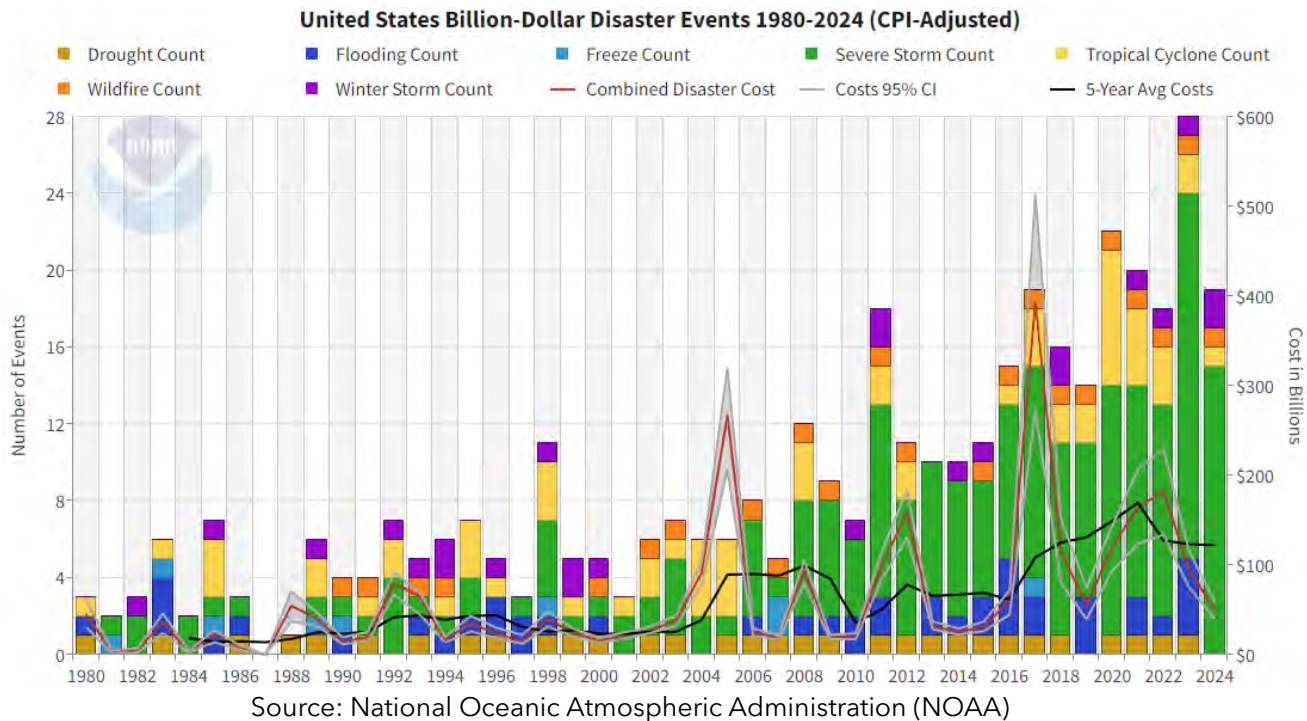
The federal Disaster Mitigation Act (DMA) of 2000 (Public Law 106-390) required state and local governments to develop mitigation plans as a condition for federal disaster grant assistance. Prior to 2000, federal disaster funding focused on disaster relief and recovery, with limited funding for hazard mitigation planning. The DMA increased the emphasis on planning for disasters before they occur.

The Plan stakeholders have prepared this mitigation plan to better protect the people and property of Jones County, certain municipalities, and schools from the effects of hazard incidents. This plan demonstrates the community's commitment to reducing risks from hazards and serves as a tool to help decision-makers direct mitigation activities and resources. The DMA encourages communities to work together on pre-disaster planning. The planning network called for by the DMA helps local governments articulate accurate needs for mitigation, resulting in faster allocation of funding and more cost-effective risk reduction projects.

The Plan stakeholders are dedicated to implementing the actions and strategies outlined in this updated MJHMP. The Plan will be maintained regularly to address changes in hazards or vulnerabilities and will be updated within the next five years.

1.3 Background and Scope

Each year in the United States, disasters kill or injure thousands of people and do extensive damage to the environment and property. Nationwide, taxpayers pay billions of dollars annually to help communities, organizations, businesses, and individuals recover from disasters. Additional expenses to insurance companies and non-governmental organizations are not reimbursed by tax dollars, making the costs of disasters several times higher than calculated amounts. The figure below shows the natural disasters in the US that have done more than one billion dollars in damage, showing how the frequency and cost of major disasters have risen over the past several decades.



However, some types of hazards are predictable, and much of the damage caused by these incidents can be mitigated through the use of various zoning, construction and permitting vehicles, and other preventative actions. Hazard mitigation planning is the process through which communities identify hazards that threaten them, determine likely impacts of those hazards, set mitigation goals, and develop, prioritize, and implement appropriate strategies to lessen impacts. FEMA defines hazard mitigation 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 provide evidence that mitigation activities are highly cost-effective. On average, each dollar spent on mitigation saves society an average of \$6 in avoided future losses in addition to saving lives and preventing injuries, as illustrated in the figure below.

	Adopt Code	Above Code	Building Retrofit	Lifeline Retrofit	Federal Grants
Overall Benefit-Cost Ratio	11:1	4:1	4:1	4:1	6:1
Cost (\$ billion)	\$1/year	\$4/year	\$520	\$0.6	\$27
Benefit (\$ billion)	\$13/year	\$16/year	\$2200	\$2.5	\$160
Riverine Flooding	6:1	5:1	6:1	8:1	7:1
Hurricane Surge	Not Applicable	7:1	Not Applicable	Not Applicable	Not Applicable
Wind	10:1	5:1	6:1	7:1	5:1

Section 1: Introduction



Earthquake	12:1	4:1	13:1	3:1	3:1
Wildland-Urban Interface Fire	Not Applicable	4:1	2:1	Not Applicable	3:1

Source: National Institute of Building Sciences, Natural Hazard Mitigation Saves: 2019 Report

This Plan was prepared pursuant to the requirements of FEMA's Local Mitigation Planning Policy Guide 2023 and Title 44 of the Code of Federal Regulations (CFR).

1.4 Planning Process

Element Addressed in Section
Element A1. Does the plan document the planning process, including how it was prepared and who was involved in the process for each jurisdiction? (Requirement 44 CFR § 201.6(c)(1)), including requirement A1-a .

The planning process is how stakeholders, partners, and the public were provided an opportunity to be involved in the identified process and how existing plans, studies, reports, and technical information were reviewed and incorporated into the plan.

Referencing FEMA mitigation planning process requirement **A1-a**. With the assistance of a planning contractor, this Plan takes a phased approach for development.

Phase 1 – Organize Resources (October 2023 – February 2024)

- a. Identify stakeholders and partners
- b. Review associated planning documents
- c. Develop the mitigation planning process
- d. Begin the hazard identification and risk assessment process

Phase 2 – Risk Assessment/Plan Development (February 2024 – December 2024)

- a. Profile all of the hazards for the jurisdiction
- b. Review past incidents
- c. Conduct a capability assessment
- d. Gather hazard information from the public
- e. Develop hazard mitigation actions
- f. Develop a plan maintenance strategy

Phase 3 – Plan Finalization (December 2024 – April 2025)

- a. Submit the Plan to the state for review
- b. Submit the Plan to FEMA for review and approval pending adoption
- c. Have all stakeholder jurisdictions adopt the Plan
- d. Receive final FEMA approval

Section 1: Introduction

Whereas appropriate, the planning contractor and Jones County EMA will seek feedback from stakeholders, partners, and the public. The table below provides the Plan’s components that are part of the feedback process:

Component	Feedback Type	Audience
Planning Kick-Off Meeting	Virtual Meeting	Stakeholders
Participation Agreement	Document Review	Stakeholders
Hazard Prioritization	Survey/Review and Comment	Stakeholders
Planning Process	Review and Comment	Stakeholders
Public Survey	Survey	Partners and Public
Previous Mitigation Actions	Review and Comment	Stakeholders
Capabilities Assessment	Survey	Stakeholders
Creation of Mitigation Actions	Survey, Review, and Comment	Stakeholders
Draft Plan Review	Document Review and Comment	Stakeholders, Partners, Public

1.4.1 Key Messages

The use of key messages ensures uniformity when discussing the project with stakeholders, partners, and the public. The following terms may be used while describing the project:

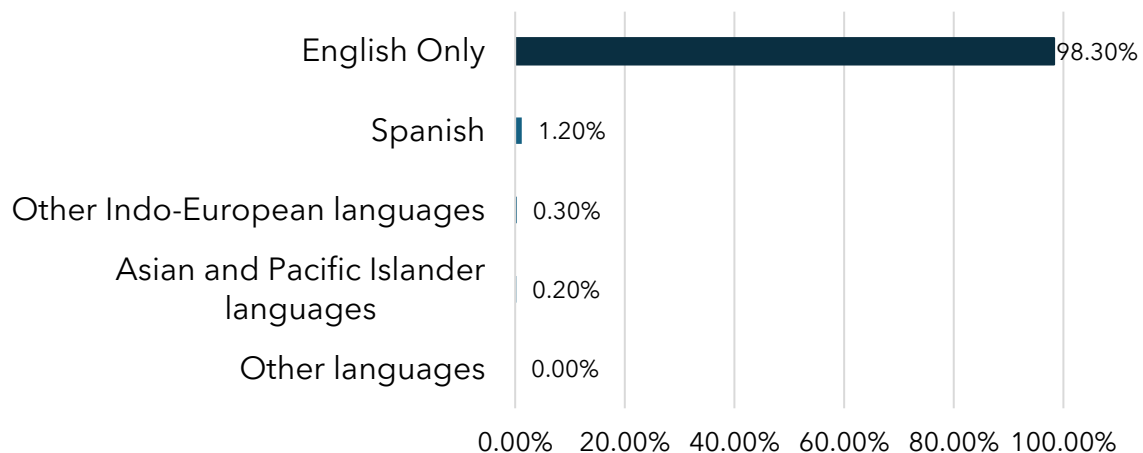
- The Jones County Emergency Management Agency (EMA) is conducting an update of the local Multi-Jurisdictional Hazard Mitigation Plan.
- Updates to the Plan are required every five (5) years, allowing participating jurisdictions to be eligible for potentially millions of dollars in federal hazard mitigation grants.
- The purpose of the Plan is to strategically guide community action and investments to reduce the local impacts of natural- and human-caused hazards.
- The mitigation plan is only one plan in a series of local emergency and disaster plans maintained by the Emergency Management Agency.

1.5 Public Outreach Strategy

Element Addressed in Section

Element A3. Does the plan document how the public was involved in the planning process during the drafting stage and prior to plan approval? (Requirement 44 CFR § 201.6(b)(1)), including requirement **A3-a**.

Referencing FEMA mitigation planning process requirement **A3-a**. The Jones County Emergency Management Agency will utilize various methods to conduct outreach and provide engagement material for the public, including vulnerable and underserved populations, to provide, at a minimum, input during the draft review process before the plan's submission for formal state or FEMA review. This outreach will provide information on the planning process, other applicable details, points of contact for questions, and other potential helpful educational information on hazard mitigation when available. The methods used for public outreach may include, but are not limited to, the Jones County website, stakeholder social media accounts, virtual meetings, news releases, online surveys, and public in-person meetings. Evidence of various participation opportunities is provided in **Appendix B**. Through the planning stakeholders and demographic information provided by the U.S. Census Bureau, it has been identified that there is not a significant population within the planning area that does not have access to the Internet or communication gaps. The figures below provide a language overview of Jones County and demonstrates known internet connectivity gaps. Given the low internet connectivity gap, including for those vulnerable and underserved, all feedback is provided digitally/virtually. No targeted outreach was undertaken however, should be considered for the next update.



Source: U.S. Census Bureau, Populations and People Statistics

Section 1: Introduction



Population in households lacking fixed broadband availability	Population in households lacking computer or broadband subscription	Population not using the internet	Population not using a PC or tablet computer
5.4%	15.0%	Not Applicable	Not Applicable

Source: U.S. Census Bureau, Digital Equity Act Population Viewer

State of Iowa’s figures for population not using the internet is less than 15% and population not using a PC or tablet computer is 25% to 29%.

The table below describes the outreach method used for public outreach, what the purpose of the outreach is, the description, and the date of offering.

Outreach Method	Outreach Purpose	Description	Date of Offering
Public Survey	Gather	Public and partner survey assessing the community	02/03/2024
			-
Document Review	Consult	Review of the DRAFT mitigation plan update.	07/30/2024
			12/27/2024
			-
			01/27/2025

Any feedback received from the public throughout the planning process was either incorporated into the plan, such as the survey results, or considered for change during the draft review process. During Jones County’s draft review, no feedback was received.

1.6 Existing Document Incorporation

Element Addressed in Section
Element A4. Does the plan describe the review and incorporation of existing plans, studies, reports, and technical information? (Requirement 44 CFR § 201.6(b)(3)), including requirement A4-a .

Referencing FEMA mitigation planning process requirement **A4-a**. Applicable existing plans, studies, reports, and technical information, as provided by Jones County were

reviewed by the planning contractor. Document review is done by either the responsible stakeholder or the planning contractor on how to incorporate them into the development/update of the plan. The table below provides a list of reviewed documents, who reviewed them, and their disposition related to the plan. Additional information on the applicable jurisdictions are found in the capabilities assessment.

Document	Reviewer	Planning Disposition
State of Iowa Hazard Mitigation Plan (2023)	Contractor	Incorporate hazard data and generalized information
Jones County, Iowa Multi-Jurisdictional Hazard Mitigation Plan (2020)	Contractor	Incorporate applicable information for 2024
Emergency Management Plan	Jones County EMA	No significant changes to implement since last update.
Comprehensive Plan	All Jurisdictions	No significant changes to implement since last update.
Capital Improvements Plan/Program	Applicable Jurisdictions*	No significant changes to implement since last update.
Floodplain Management Plan	Applicable Jurisdictions*	No significant changes to implement since last update.
Zoning Ordinance	Applicable Jurisdictions*	No significant changes to implement since last update.

* - Refer to the capabilities assessment for jurisdictions this applied to.

1.7 Planning Stakeholders and Partners

Element Addressed in Section
Element A1. Does the plan document the planning process, including how it was prepared and who was involved in the process for each jurisdiction? (Requirement 44 CFR § 201.6(c)(1)), including requirement A1-b .
Element A2. Does the plan document an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia and other private non-

Section 1: Introduction



Element Addressed in Section

profit interests to be involved in the planning process? (Requirement 44 CFR § 201.6(b)(2)), including requirements **A2-a**.

For the purposes of this Plan, the following terms are defined as:

Stakeholders – Those with direct functional roles in the development of the Plan whose jurisdiction is covered by. This may be the unincorporated part of the county, municipalities, and school districts.

Partners—Those who don’t have a governing jurisdiction covered by the Plan, however, have a vested interest in its development. These may be neighboring communities, local and regional agencies involved in hazard mitigation activities, agencies that have the authority to regulate development, businesses, academia, and other private and non-profit interests. The local Emergency Management Agency identifies these partners.

Referencing FEMA mitigation planning process requirement **A1-b**. The planning stakeholders are the primary points of contact during the plan's development. These pre-identified stakeholders serve as the project liaisons to the governing body they represent. Without set frequency, this group participates throughout the plan updating process and is encouraged to provide planning feedback and assist with public outreach and their governing bodies’ engagement. Representatives are expected to provide at least one form of input through participation or feedback. This participation includes but is not limited to virtual meetings, polls or surveys, plan component document reviews, email communication, and phone calls. Various evidence of participation is provided in **Appendix A**. The following is the list of identified stakeholders for this plan update.

The table below outlines which stakeholders were a part of the planning process. Though multiple individuals may be documented as a participant in the planning process, only one response is needed by covered jurisdiction.

Stakeholder	Point of Contact Title
Jones County	Emergency Management Coordinator
Jones County	Auditor
Jones County	Sheriff
Jones County	Board of Supervisor
City of Anamosa	Mayor
City of Anamosa	City Administrator
City of Martelle	Mayor
City of Martelle	City Clerk
City of Monticello	Mayor

Section 1: Introduction

Stakeholder	Point of Contact Title
City of Monticello	City Administrator
City of Morley	Mayor
City of Morley	City Clerk
City of Olin	Mayor
City of Olin	City Clerk
City of Onslow	Mayor
City of Onslow	City Clerk
City of Oxford Junction	Mayor
City of Oxford Junction	City Clerk
City of Wyoming	Mayor
City of Wyoming	City Clerk
Anamosa School District	Superintendent
Midland School District	Superintendent
Monticello School District	Superintendent
Olin School District	Superintendent
Sacred Heart School	Principal
St. Patrick School	Principal

The following table describes the outreach method used for the planning stakeholders, what the purpose of the outreach is, the description, and the date of offering.

Outreach Method	Outreach Purpose	Description	Date of Offering
Presentations to Governing Bodies	Inform	Provided a planning kick-off virtual meeting for plan stakeholders to brief them on the plan update process.	01/11/2024
Individual Outreach	Inform	Sent the recording and slides of the kick-off meeting for additional review if needed.	01/15/2024
Survey	Consult	Whole community hazard ranking assessment	01/15/2024 - 09/30/2024
Document Review	Consult	Review the proposed Planning Process and Outreach Strategy to gather feedback	02/08/2024 - 10/31/2024
Content Review	Consult	Stakeholder review of previous mitigation actions and progress.	05/09/2024 - 10/31/2024
Survey	Gather	Assessment of local capabilities, documents, and critical infrastructure	08/06/2024 - 10/31/2024

Section 1: Introduction

Outreach Method	Outreach Purpose	Description	Date of Offering
Individual Outreach	Gather	Gather local data that may be used to fill planning gaps or development of tables and maps.	05/01/2024 - 10/31/2024
Individual Outreach	Consult	Create mitigation actions	10/01/2024 - 12/10/2024
Document Review	Consult	Review of the DRAFT mitigation plan update.	12/01/2024 - 12/20/2024

Referencing FEMA mitigation planning process requirement **A2-a**. The planning partners may provide additional input into the plan. However, in most cases, it gives them an understanding of what this jurisdiction's governing bodies prioritize for local mitigation actions. The specific entities that comprise the planning partners are defined by the Jones County Emergency Management Agency and are based on the unique characteristics of the county and municipalities. At a minimum, the planning partners can provide plan input during the draft review process. The planning partners are primarily allowed to provide input by documentation review and/or surveys. The table below provides a list of partner categories as defined in the FEMA planning process requirements and the identified entities.

Category	Entities/Entity Type
Local and regional agencies involved in hazard mitigation activities	Jones County Public Health
Agencies that have the authority to regulate development	Cities as provided in the stakeholders list
Neighboring communities	City of Cascade, Dubuque County EMA, Jackson County EMA
Businesses, Academia, and other private organizations	Jones Regional Medical Center
Nonprofit organizations that work directly with and/or provide support to underserved communities and socially vulnerable populations	Schools as provided in the stakeholders list

The table below describes the outreach method used for the planning partners, what the purpose of the outreach is, the description, and the date of offering. These organizations had an opportunity to participate through the online survey and document review, posted in locations such as Facebook, on websites, or through direct outreach via email.

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Outreach Method	Outreach Purpose	Description	Date of Offering
Public Survey	Gather	Public and partner survey assessing the community	02/01/2024 - 06/15/2024
Document Review	Consult	Review of the DRAFT mitigation plan update.	12/27/2024 - 01/27/2025

Feedback gathered throughout this process, if applicable, is brought to the stakeholders for review and potential plan inclusion.



SECTION 2: WHOLE COMMUNITY PROFILE



SECTION 2: WHOLE COMMUNITY PROFILE

2.1 Brief History

Jones County, Iowa, officially organized in 1839, has a rich history that traces back to the mid-19th century. The county, named after U.S. Senator George Wallace Jones, was originally inhabited by Native American tribes like the Meskwaki (Fox) and Sauk before European settlers arrived in the 1830s, drawn by fertile land. Early settlers, mostly from states like Ohio and New York, established a strong agricultural tradition that remains central to the county's identity.

Anamosa, the county seat, was founded in 1838 and initially named Buffalo Forks before changing to Anamosa in 1847. It grew rapidly, especially with the arrival of the railroad, and became known for its stone quarrying industry and the Anamosa State Penitentiary, established in 1872. The town is also famous for being the birthplace of Grant Wood, the renowned American artist behind *American Gothic*. Nearby, Monticello was settled in the 1830s and became a key agricultural hub, with the Maquoketa River enhancing its farming and trade. The town is known for hosting the Great Jones County Fair, a long-standing cultural event.

Other towns in the county, such as Olin, Oxford Junction, Wyoming, and Martelle, each have their own unique histories. Olin, founded in the early 1850s, became a significant rail stop, while Oxford Junction attracted many Czech and German immigrants due to its role as a railroad town. Wyoming, established in 1854, became an important local trade center and is noted for its historical downtown district. Martelle, founded in the 1850s, remains a small but close-knit farming community.

Throughout the 19th and early 20th centuries, Jones County's economy was driven by agriculture, with corn, soybeans, and livestock being prominent. The arrival of the railroads facilitated the growth of its towns as centers of trade and agriculture. While agriculture remains vital, the county has seen industrial growth and residential development in more recent years, benefiting from its proximity to larger cities like Cedar Rapids and Dubuque.

In addition to its agricultural and industrial significance, Jones County is home to natural and recreational landmarks like Wapsipinicon State Park, offering outdoor activities such as hiking and fishing. Culturally, Jones County is celebrated for its fairs, festivals, and historical sites. Its connection to Grant Wood and other historical figures enriches its heritage, while towns like Anamosa and Monticello continue to serve as cultural and

economic hubs. Despite modernization, Jones County has preserved its small-town charm, agricultural roots, and historical significance, making it an enduring part of Iowa's rural landscape.

2.2 Resources

2.2.1 Historical and Cultural

Jones County, Iowa, is rich in historical and cultural resources, reflecting its long history and contributions to regional and national heritage. The following are some key historical and cultural sites and resources within the county:

- **Grant Wood Art Colony and Heritage:** Home to the legacy of Grant Wood, the famous painter of *American Gothic*. The landscape of Jones County heavily influenced his work. The Grant Wood Scenic Byway highlights the region's artistic history.
- **Anamosa State Penitentiary Museum:** Built in 1875, this limestone prison is one of Iowa's oldest and has a museum showcasing its history, artifacts, and exhibits on prison life.
- **Wapsipinicon State Park:** Features structures built by the Civilian Conservation Corps (CCC) during the 1930s, reflecting New Deal-era infrastructure projects.
- **Stone City:** A historic limestone quarry town that became an artist colony in the 1930s, heavily tied to Grant Wood's artistic endeavors.
- **Jones County Historical Society Museum:** Located in Monticello, this museum preserves the county's local history, focusing on early settlers, agriculture, and daily life artifacts.
- **Monticello Heritage and Cultural Events:** Monticello hosts cultural events, including the Great Jones County Fair, one of Iowa's largest county fairs, highlighting local culture and agriculture.
- **Historic Downtown Districts:** Preserved downtown areas in towns like Anamosa and Monticello, showcasing late 19th and early 20th-century architecture.
- **Cemeteries and Churches:** Many historic cemeteries and churches dating back to the mid-1800s provide insights into the county's religious and social history.
- **Jones County Courthouse:** A classical revival architectural structure built in the early 1900s, serving as an important civic landmark in Anamosa.

These sites reflect the rich historical and cultural legacy of Jones County, linking its agricultural, artistic, and architectural heritage.

It should be noted that, as defined by the National Environmental Policy Act (NEPA), any property over 50 years of age is considered a historic resource and potentially eligible for the National Register. Thus, if the property is altered as a result of a major federal action, it must be evaluated under the guidelines set forth by NEPA. Structural mitigation projects are considered alternations for the purpose of this regulation.

2.2.2 Natural

Jones County, Iowa, is home to a variety of natural resources that support its agricultural economy, recreational activities, and environmental conservation efforts. Here's an overview of the key natural resources found in the county:

Soils and Farmland

- **Agricultural Land:** The county's fertile soils, particularly its rich prairie soils, are one of its most valuable natural resources. The soil composition is ideal for growing crops like corn and soybeans, making agriculture the backbone of the local economy.
- **Topsoil Conservation:** Due to the heavy reliance on agriculture, conservation efforts are in place to prevent soil erosion and promote sustainable farming practices. Programs from the USDA and local conservation districts help manage topsoil quality and water runoff.

Water Resources

- **Rivers and Streams:** Jones County is traversed by the Wapsipinicon River and the Maquoketa River, both of which play an essential role in the county's ecosystem. These rivers provide irrigation for agriculture, support local wildlife, and serve as recreational areas for fishing, kayaking, and camping.
- **Aquifers and Groundwater:** The region relies on underground aquifers for water supply, particularly for agricultural irrigation and local municipalities. The protection of these groundwater resources is a priority for maintaining clean drinking water and agricultural productivity.
- **Floodplains:** The floodplains of these rivers are crucial for flood management and ecological balance. These areas are often targeted for conservation efforts to preserve wetlands and reduce flooding risks during heavy rains.

Forests and Woodlands

- **Forested Areas:** Jones County has larger-than-average forest cover compared to many other Iowa counties, particularly along the river valleys. Forests in the Wapsipinicon State Park and other protected areas offer habitats for diverse wildlife and serve as recreational spots for hiking, bird-watching, and camping.
- **Hardwood Trees:** Native trees like oak, hickory, and maple dominate the local forests. These hardwood forests are essential for maintaining biodiversity and are sometimes used for selective timber harvesting.

Mineral Resources

- **Limestone Quarries:** Jones County is historically known for its limestone quarries, particularly around Stone City, which was once a major supplier of limestone for building materials across the Midwest. While the quarrying industry has decreased, the region's geological history is still evident, with limestone cliffs and formations found throughout the area.

Wetlands and Conservation Areas

- **Wetlands:** Wetlands are critical for maintaining water quality, supporting wildlife, and managing floodwaters. Areas around the county's rivers and streams are protected to conserve these valuable wetland ecosystems.
- **Conservation Efforts:** Local organizations, such as the Jones County Conservation Board, work to preserve natural habitats, promote sustainable land use, and manage resources through parks, trails, and nature reserves.

Recreational Natural Resources

- **Wapsipinicon State Park:** This park is one of the county's most important natural assets, offering scenic views of the Wapsipinicon River, forested areas, and caves. It is a popular destination for camping, picnicking, and nature observation.
- **Hale Wildlife Area and Other Reserves:** Jones County also includes several other natural preserves and wildlife areas that provide recreational opportunities such as hiking, hunting, and bird-watching, while also protecting natural habitats.

Jones County's natural resources, including its fertile soils, rivers, forests, and wildlife, contribute to its rich agricultural productivity and recreational appeal. These resources are managed through various conservation efforts aimed at ensuring the sustainability of the environment and the local economy.

Section 2: Whole Community Profile

2.2.3 Endangered Species and Threatened Species

In Jones County, Iowa, several species are listed as either endangered or threatened due to habitat loss, environmental changes, and human activity. These species are protected under the Endangered Species Act (ESA), and conservation efforts are in place to help preserve their populations. Here's an overview of some of the notable endangered and threatened species in the region:

Endangered Species

- **Indiana Bat (*Myotis sodalist*):** The Indiana bat is a small, insect-eating bat that relies on caves and forested areas for roosting and hibernation. Jones County's forested areas, particularly along river corridors, provide suitable habitats. However, habitat loss, white-nose syndrome (a fungal disease), and human disturbance during hibernation have contributed to its endangered status.
- **Northern Long-Eared Bat (*Myotis septentrionalis*):** This bat species is also endangered, primarily due to white-nose syndrome, which has devastated bat populations across the U.S. Like the Indiana bat, the northern long-eared bat uses forests for roosting and depends on caves and mines for hibernation, many of which are found in or near Jones County. Deforestation and disturbances to hibernation areas have led to its endangered classification.
- **Higgins Eye Pearlymussel (*Lampsilis higginsii*):** The Higgins eye pearlymussel is a freshwater mussel native to the Mississippi River basin, including some tributaries in Iowa. This species is highly sensitive to water pollution, habitat destruction, and sedimentation, which have caused its numbers to decline. Conservation efforts focus on improving water quality in the rivers and streams where this mussel is found.

Threatened Species

- **Eastern Prairie Fringed Orchid (*Platanthera leucophaea*):** This prairie orchid is a threatened species found in the tallgrass prairies of the Midwest, including remnant prairies in Iowa. Habitat loss due to agricultural expansion and development has severely reduced its range. The few remaining populations are protected, and conservation efforts focus on preserving prairie habitats.
- **Prairie Bush Clover (*Lespedeza leptostachya*):** The prairie bush clover is another prairie plant species listed as threatened. It grows in dry prairies, which have been largely converted to farmland in Iowa. Small remnants of native prairie in Jones

County may support this species, and conservation work focuses on protecting and restoring prairie ecosystems.

- Topeka Shiner (*Notropis topeka*): The Topeka shiner is a small minnow that inhabits small, clean streams with high water quality. It has been listed as threatened due to water pollution, stream habitat destruction, and competition with invasive species. Some of the streams in and around Jones County are part of its historical range, and ongoing efforts aim to improve water quality and restore stream habitats.

Conservation Efforts

Jones County engages in a variety of conservation efforts to protect its endangered and threatened species. The Iowa Department of Natural Resources (DNR), in partnership with federal agencies like the U.S. Fish and Wildlife Service, implements habitat restoration and species recovery programs aimed at enhancing the populations of species such as the Indiana bat, northern long-eared bat, Higgins eye pearlymussel, and others. These efforts often include habitat preservation, where forested areas and wetlands are protected to provide safe environments for wildlife.

Specific efforts focus on protecting riparian habitats—the areas alongside rivers and streams—since these are critical for species like the Topeka shiner and the Higgins eye pearlymussel. Improving water quality through reducing agricultural runoff and pollution is key to supporting the aquatic ecosystems these species depend on. Programs also target reducing erosion and sedimentation in rivers, helping to create a more stable habitat for both fish and freshwater mussels.

For prairie species like the eastern prairie fringed orchid and prairie bush clover, conservation efforts focus on restoring and managing remaining tallgrass prairie remnants. Native prairie restoration projects aim to bring back some of the ecological balance lost through agricultural expansion. Controlled burns, invasive species management, and seed banking are strategies used to help these prairie ecosystems recover.

Local conservation groups, such as the Jones County Conservation Board, play an active role in managing public lands, such as Wapsipinicon State Park, where forested areas, wetlands, and prairies are preserved. These parks provide essential habitats for various endangered species, while also promoting public education and outdoor recreation.

Collaborative projects between government agencies, conservation groups, and farmers promote sustainable land use practices. These include buffer strips along streams to

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filter out pollutants, cover cropping, and rotational grazing, all of which help to improve the quality of water and soil while also maintaining productive farmland.

2.3 Built Environment

2.3.1 General Property

Understanding property values is crucial to disaster preparedness and mitigation because it helps local governments and emergency planners assess potential economic impacts and allocate resources effectively. Knowing the total value of properties in a jurisdiction, such as Jones County, allows officials to prioritize areas for disaster prevention measures, particularly high-value commercial or residential areas that are more vulnerable to significant financial loss. Additionally, property value assessments aid in financial planning for disaster recovery by providing estimates of potential damage costs, which helps in securing insurance coverage, setting aside reserve funds, and applying for federal assistance. Property values also guide the targeting of mitigation investments, ensuring that critical infrastructure or economically important areas receive necessary protection. In the event of a disaster, responders can prioritize high-value areas to minimize overall economic loss. Data gathered from reports like the Abstract of Values from the Jones County Assessor ensures that both preparedness and response efforts are aligned with the community's economic landscape, ultimately helping reduce financial and structural damage during disasters.

The following chart provides an overview of property values related to agriculture:

City/County	Agricultural Realty	Residential Dwellings on Agricultural Realty
Anamosa	\$281,580	\$0
Cascade	\$81,800	\$128,240
Martelle	\$224,160	\$0
Monticello	\$2,536,700	\$1,877,980
Morley	\$32,120	\$0
Olin	\$492,660	\$184,150
Onslow	\$99,710	\$0
Oxford Junction	\$338,810	\$0
Wyoming	\$43,650	\$45,700
Jones County	\$562,568,400	\$275,607,510

The following chart provides an overview of residential, commercial, and industrial property values:

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City/County	Residential Realty	Residential 3+ Dwellings Realty	Commercial Realty	Industrial Realty
Anamosa	\$270,044,750	\$11,299,146	\$39,353,844	\$5,138,420
Cascade	\$36,010,540	\$0	\$819,850	\$271,770
Martelle	\$15,228,600	\$201,366	\$2,635,914	\$0
Monticello	\$237,952,580	\$12,887,761	\$52,162,989	\$15,612,580
Morley	\$2,366,780	\$87,690	\$155,310	\$0
Olin	\$25,063,350	\$471,530	\$1,490,590	\$0
Onslow	\$7,298,250	\$28,071	\$863,319	\$0
Oxford Junction	\$13,168,060	\$26,098	\$1,307,152	\$0
Wyoming	\$23,609,930	\$167,765	\$5,245,385	\$0
Jones County	\$1,261,815,370	\$26,688,893	\$149,967,807	\$22,454,960

2.3.2 Repetitive Loss Properties

Element Addressed in Section

Element B2. Does the plan include a summary of the jurisdiction's vulnerability and the impacts on the community from the identified hazards? Does this summary also address NFIP insured structures that have been repetitively damaged by floods? (Requirement 44 CFR § 201.6(c)(2)(ii)), including requirement **B2-c**.

Properties covered under the National Flood Insurance Program (NFIP) that have experienced multiple flood-related insurance claims, specifically distinguishing between repetitive loss (RL) and severe repetitive loss (SRL) properties. RL properties are those that have filed two or more flood claims of at least \$1,000 each within a 10-year period, signaling locations with frequent flooding issues that may warrant intervention or mitigation. In contrast, SRL properties have experienced either four or more flood claims exceeding \$5,000 each (totaling over \$20,000 cumulatively) or two claims totaling the building's value, indicating a higher degree of risk and recurrent loss. By capturing both the count of claims and indicators of mitigation or insurance status, this dataset enables an assessment of areas within a county where flood-related losses are most concentrated, thus informing floodplain management and risk mitigation strategies. The following information is provided for the planning area from FEMA:

- Repetitive Loss Properties: 15 properties
- Severe Repetitive Loss Properties: 1 property
- Total Repetitive Loss Properties: 16 properties have been identified as repetitive loss properties.

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- Total Loss Claims: There have been a total of 44 claims filed across these properties.
- Average Loss Claims per Property: Approximately 2.75 claims per property.
- Types of Properties:
 - Single-family homes (code 1.0): 9 properties
 - Multifamily units (code 4.0): 4 properties
 - Mobile homes (code 2.0): 2 properties
 - Commercial or other non-residential (code 6.0): 1 property
- Primary Residences: 7 properties are identified as primary residences.
- Mitigated Properties: 3 properties have undergone mitigation efforts.
- Insured Properties: 3 properties currently hold active insurance.

The Iowa DNR lists the following repetitive losses by jurisdiction:

Jurisdiction	# of RL Properties	# of Single Family	# of Other-Non Residential	# of 2-4 Family	# of Business
Jones County	3	2	1		
Anamosa	1	1			
Monticello	4		2	1	1
Olin	3	2		1	
Oxford Junction	1	1			
Wyoming	1	1			

2.4 Geography and Climate

Jones County, Iowa, is located in the eastern part of the state, encompassing 577 square miles of primarily agricultural land. The terrain is characterized by gently rolling hills, fertile plains, and river valleys, with the Maquoketa River flowing through the northern part of the county and the Wapsipinicon River in the west. These rivers contribute to the county's agricultural productivity and offer recreational opportunities, particularly at Wapsipinicon State Park near Anamosa, which features limestone bluffs, caves, and woodlands. The land is largely composed of fertile loess soils, making it ideal for the cultivation of crops like corn and soybeans, which dominate the local economy.

Jones County has a humid continental climate, marked by four distinct seasons. Summers are typically warm and humid, with average highs in the mid-80s°F in July,

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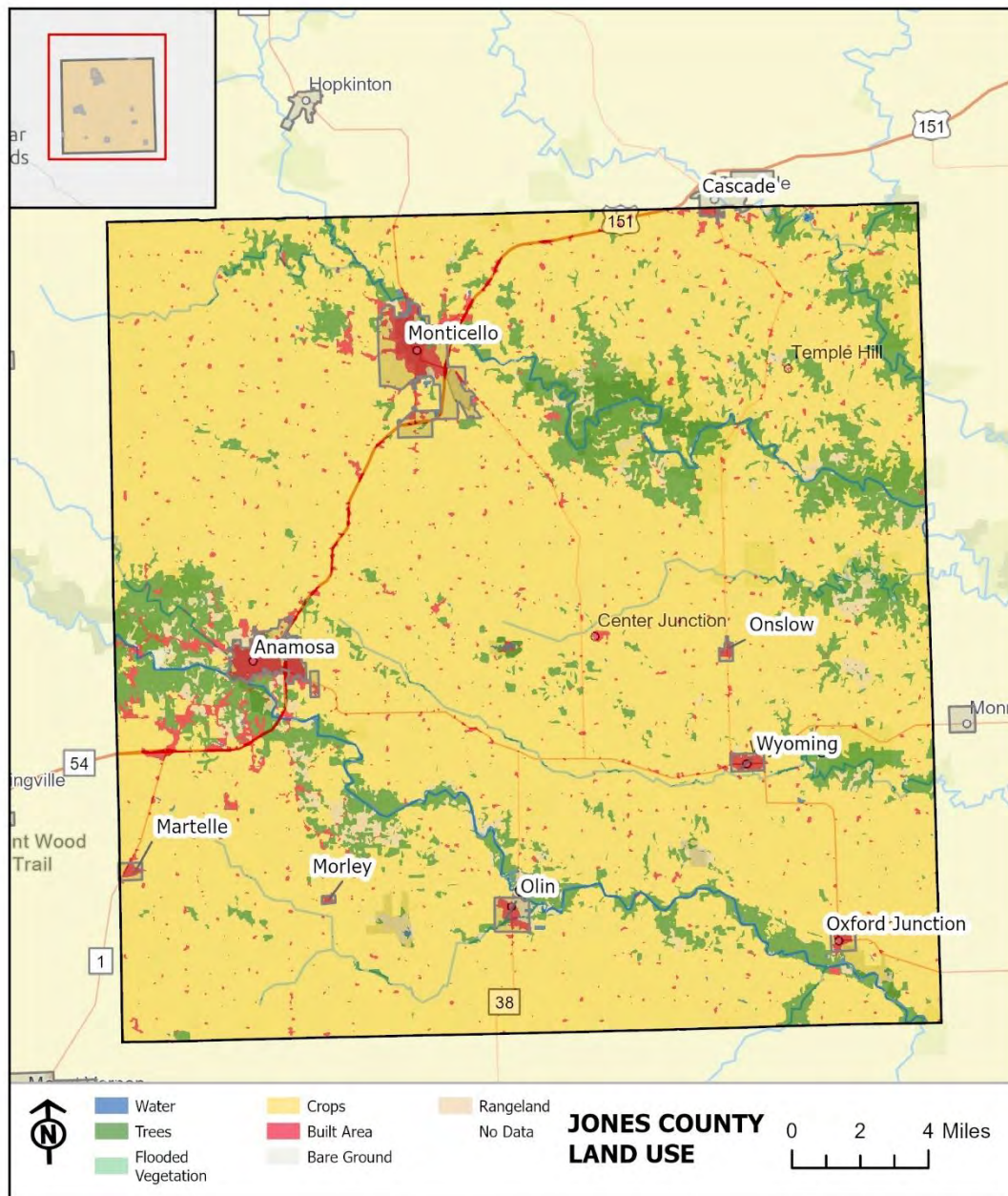
while winters are cold, with January lows averaging around 12°F. The county receives about 35 inches of annual precipitation, much of which falls in the form of rain from April to September, supporting the growing season for crops. Snowfall in winter averages around 30 inches, with occasional periods of heavy snow. The area also experiences severe weather, including thunderstorms, hail, and tornadoes, particularly in the spring and early summer. Flooding can occur along the rivers, particularly during periods of heavy rain or snowmelt.

2.4.1 Land Use

Jones County, Iowa, is predominantly agricultural, with vast corn and soybean fields, especially in the central and southwestern areas. The county also has more forested land than the state average, with notable forests along the Maquoketa and Wapsipinicon Rivers, adding scenic beauty and ecological diversity.

The cities in Jones County each have unique land uses. Anamosa (2.61 square miles) has commercial areas concentrated downtown and along highways, surrounded by residential neighborhoods and natural features like the Wapsipinicon River and wetlands. Martelle (0.34 square miles) is mostly agricultural, with cornfields and a small commercial hub at its main junction, surrounded by grasslands and some wooded areas. Monticello (6.33 square miles) sits between cornfields and the Maquoketa River valley, with commercial development along the highway and a mix of grasslands, ponds, and wetlands.

Smaller towns like Morley (0.09 square miles) are mainly residential, surrounded by farmland and lacking a commercial district. Olin (1.04 square miles) features a forested area along Walnut Creek, with residential and commercial zones nearby, bordered by the Wapsipinicon River, ponds, and wetlands. Onslow (0.23 square miles) is a small residential community with rolling farmland and no commercial or wooded areas. Oxford Junction (0.69 square miles) has a mix of grass, pasture, crops, and timber, especially near older neighborhoods along the Wapsipinicon River. Wyoming (0.51 square miles) has a commercial center, residential areas, grasslands, and small wooded patches, with surrounding cornfields and alfalfa farms.



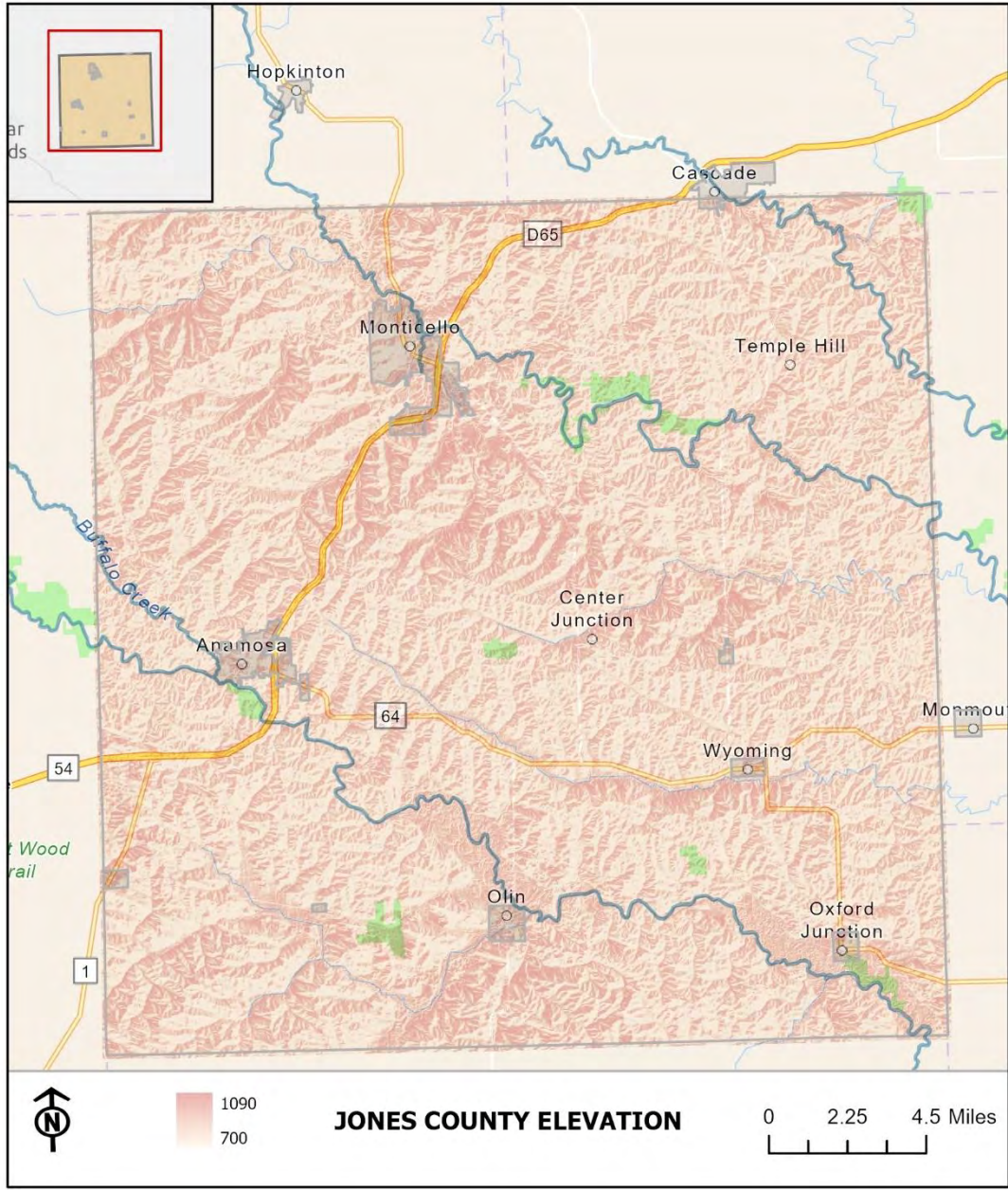
2.4.2 Elevation

Jones County, Iowa, displays a diverse range of elevations, with its landscape shaped by river valleys and bluffs. The county's lowest elevation, around 700 feet above sea level, is found in the river valleys, particularly near the Wapsipinicon River in the southeast. The highest points, close to 1,100 feet above sea level, are in the northern part of the county along the Maquoketa River bluffs. Cities in the county also vary in elevation: Anamosa's

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elevations range from 760 feet near the Wapsipinicon River to 930 feet in the northern part of the city. Martelle and Monticello have more moderate elevation variations, with Martelle averaging 900 feet and Monticello varying from 800 feet to over 1,000 feet in the western hills. Smaller communities like Morley, Olin, and Onslow show less dramatic elevation differences, with Olin being one of the lowest cities at 750 feet on average. Oxford Junction and Wyoming are generally flat, with Oxford Junction ranging from 710 to 750 feet above sea level, while Wyoming's elevations span from 820 to 900 feet.

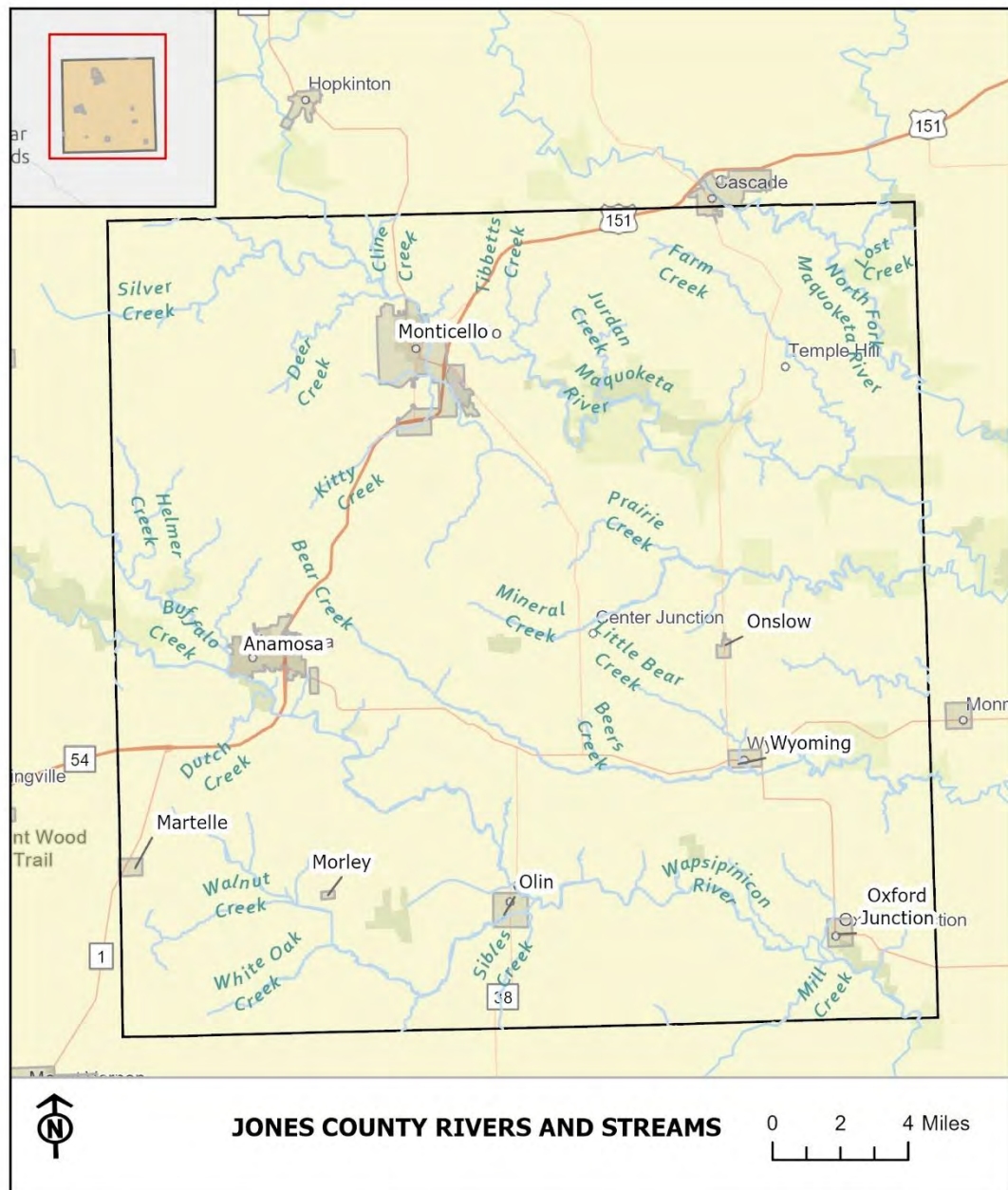




2.4.3 Rivers and Streams

Jones County, Iowa, is home to several significant rivers and streams. The largest is the Wapsipinicon River, which flows through the central and southern parts of the county, passing near Anamosa and Olin. The Wapsi, a tributary of the Mississippi River, spans about 225 miles from its origin in Minnesota to its confluence with the Mississippi in Iowa. Another major river, the Maquoketa, borders the northern portion of the county near Monticello. It flows for approximately 140 miles, ending in the Mississippi, and is known for its popularity among anglers. Smaller creeks, such as Buffalo Creek and Fawn Creek near Anamosa, and Kitty Creek and Deer Creek near Monticello, are also prominent in the region. While cities like Martelle, Morley, Onslow, and Wyoming lack major rivers within their limits, streams such as Bear Creek and Walnut Creek provide local drainage and contribute to the county's waterways.

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2.4.4 Watersheds

Jones County, Iowa, is part of four major HUC-10 watersheds, with most of the county falling within the Maquoketa River watershed. The southern half of the county is predominantly within the Upper and Lower Wapsipinicon watersheds, while a small section in the southwest belongs to the Lower Cedar River watershed. Within these larger watersheds, the county contains approximately 30 HUC-12 sub-watersheds due to the large number of creeks.

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Anamosa is located between the Upper and Lower Wapsipinicon watersheds and is part of sub-watersheds like Buffalo Creek and Dutch Creek. Martelle sits between the Lower Wapsipinicon and Lower Cedar watersheds, making it the only town in the county that crosses into the Cedar watershed. Monticello lies entirely within the Maquoketa watershed, with parts of four sub-watersheds, including Kitty Creek. Olin and Morley are both part of the Lower Wapsipinicon watershed, with Olin spanning three sub-watersheds. Onslow straddles the Mineral Creek and Bear Creek sub-watersheds, while Oxford Junction is entirely within the Wapsipinicon River-Plum Creek watershed, and Wyoming is primarily within the Bear Creek sub-watershed.

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2.4.5 Flooding

Jones County, Iowa, faces significant flood risks due to its geography and proximity to major rivers and streams. The county's flood-prone areas are primarily along the Wapsipinicon and Maquoketa Rivers, which have a history of frequent flooding. Towns like Anamosa and Olin, located near the Wapsipinicon River, experience regular floods, particularly in low-lying areas and near creeks that flow into the river. Monticello, situated near the Maquoketa River and its tributary, Kitty Creek, also faces flood risks,

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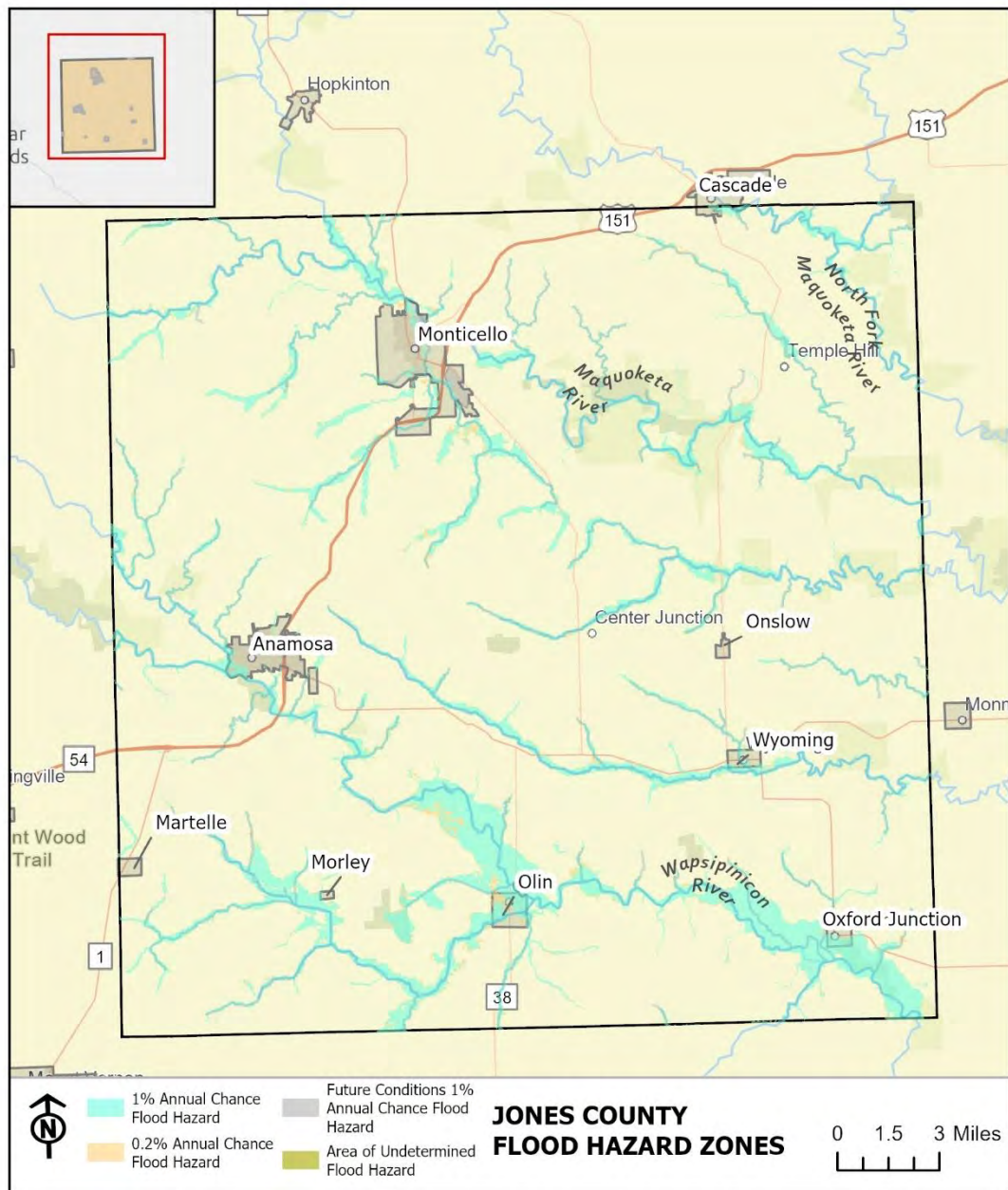


especially along the northern parts of the city. Smaller towns such as Morley and Onslow experience less frequent flooding, with issues mainly arising from pooling runoff in flat, low-lying areas. Flood-prone areas in Wyoming and Oxford Junction are primarily near Bear Creek and the Wapsipinicon River tributaries, where flash floods and riverine floods occur.

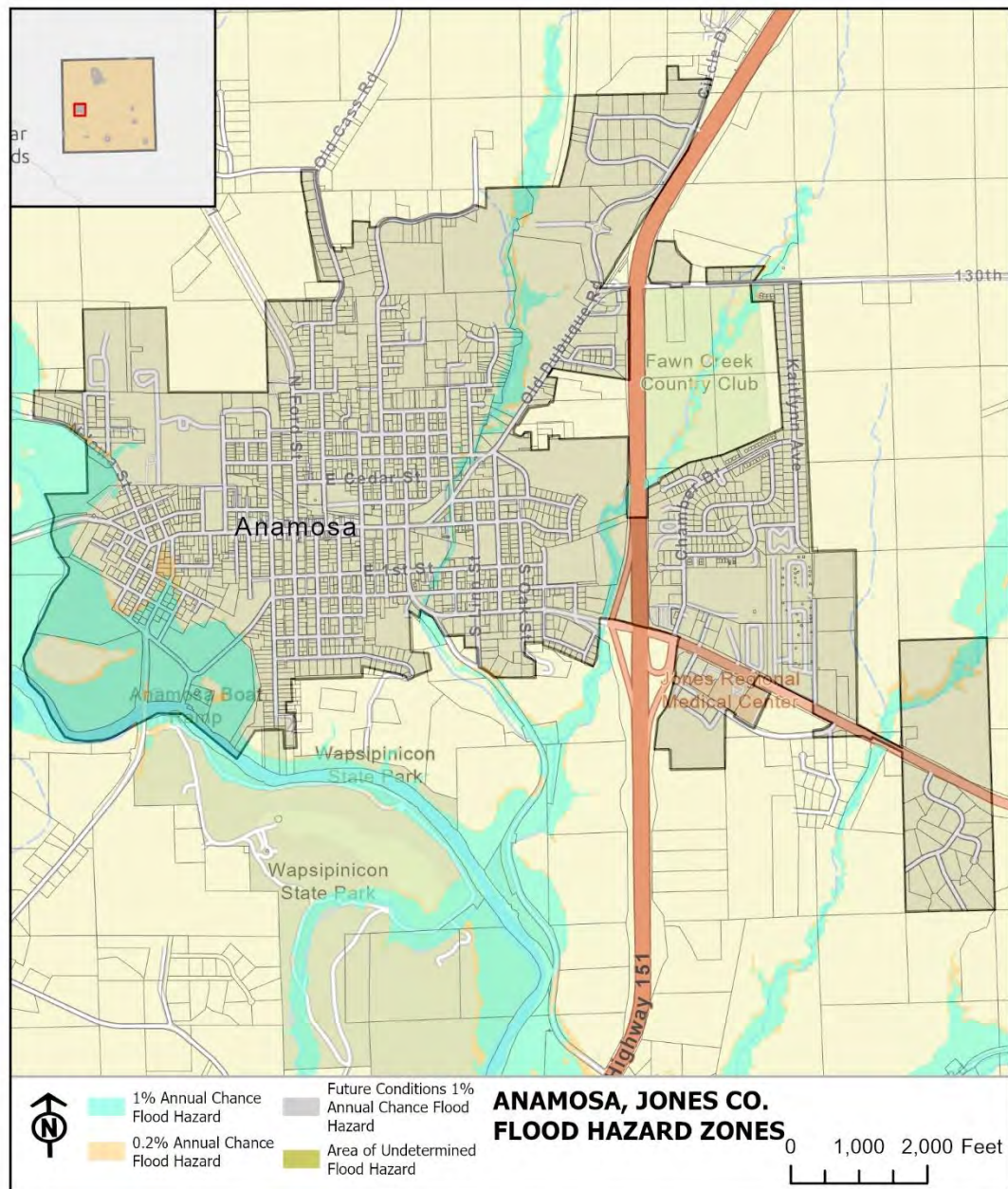
Jones County’s flood insurance maps were last updated in 2018 to reflect more accurate risk assessments. The county utilizes FEMA’s updated Flood Insurance Rate Maps (FIRMs) and detailed studies like the Flood Insurance Study (FIS), first completed in 2011, to guide floodplain management and insurance requirements. These resources, along with newer two-dimensional flood risk modeling, help predict and manage both fluvial and pluvial flood risks across the planning area.

The following are maps of flood inundation areas throughout the planning area:

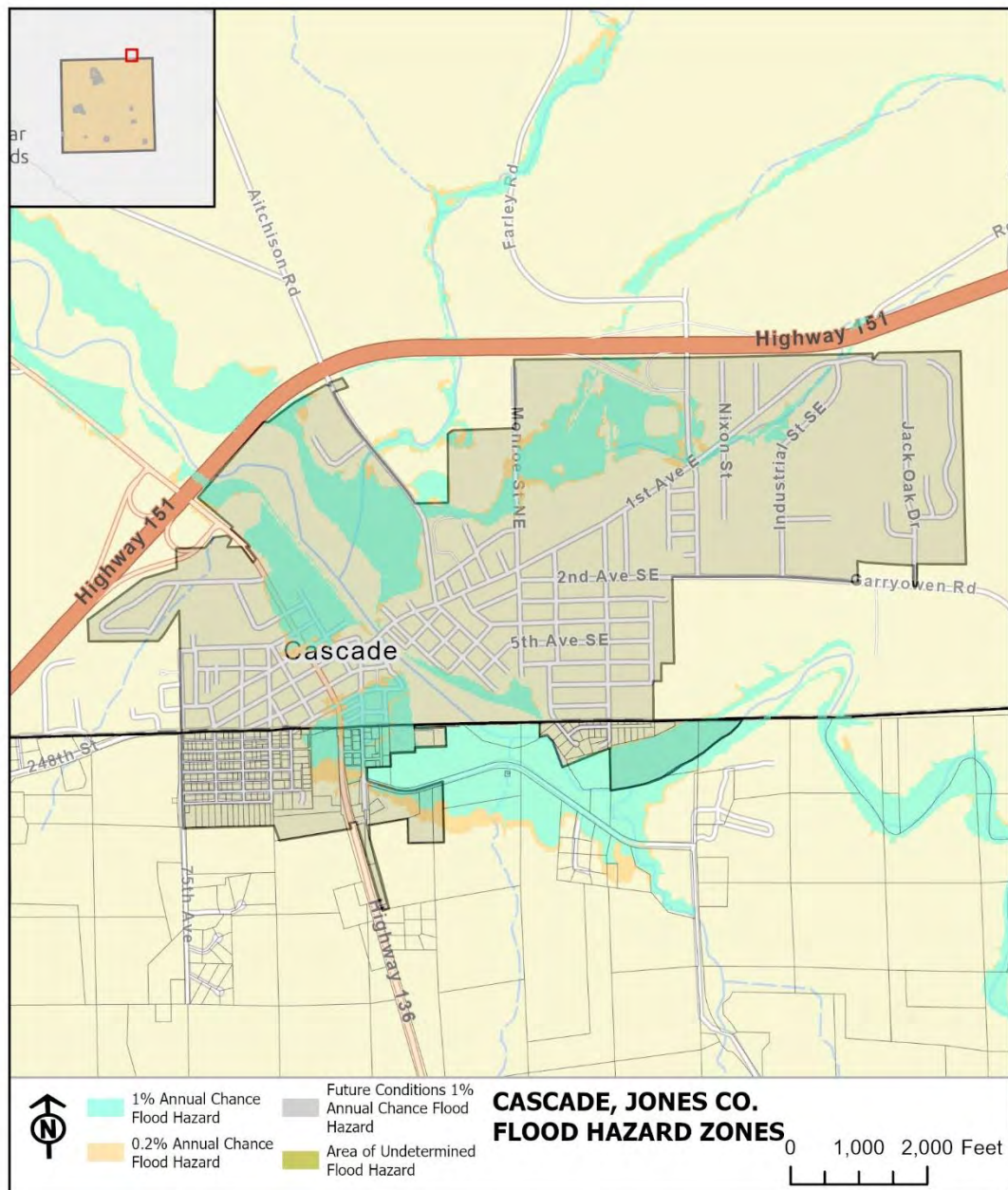
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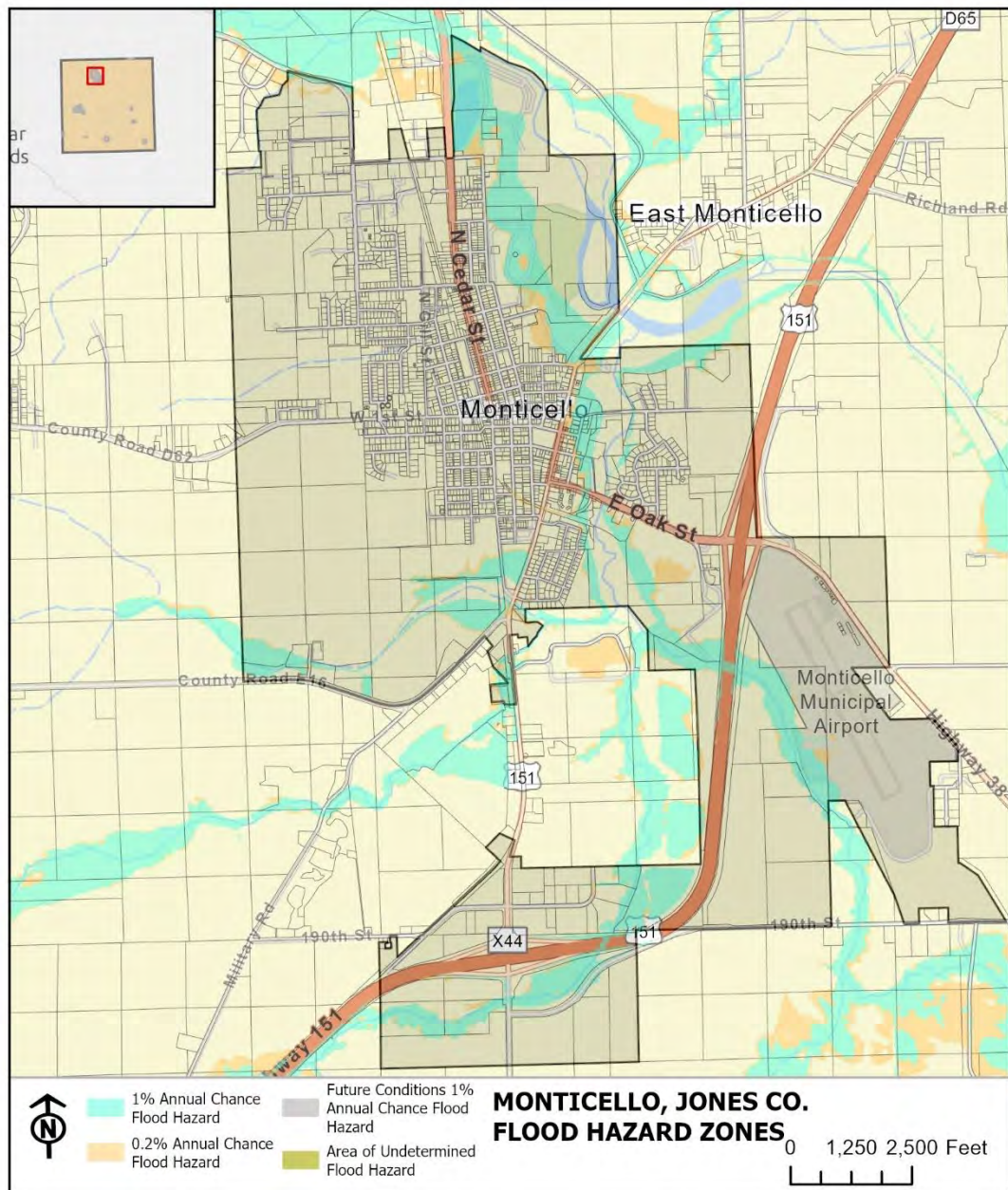
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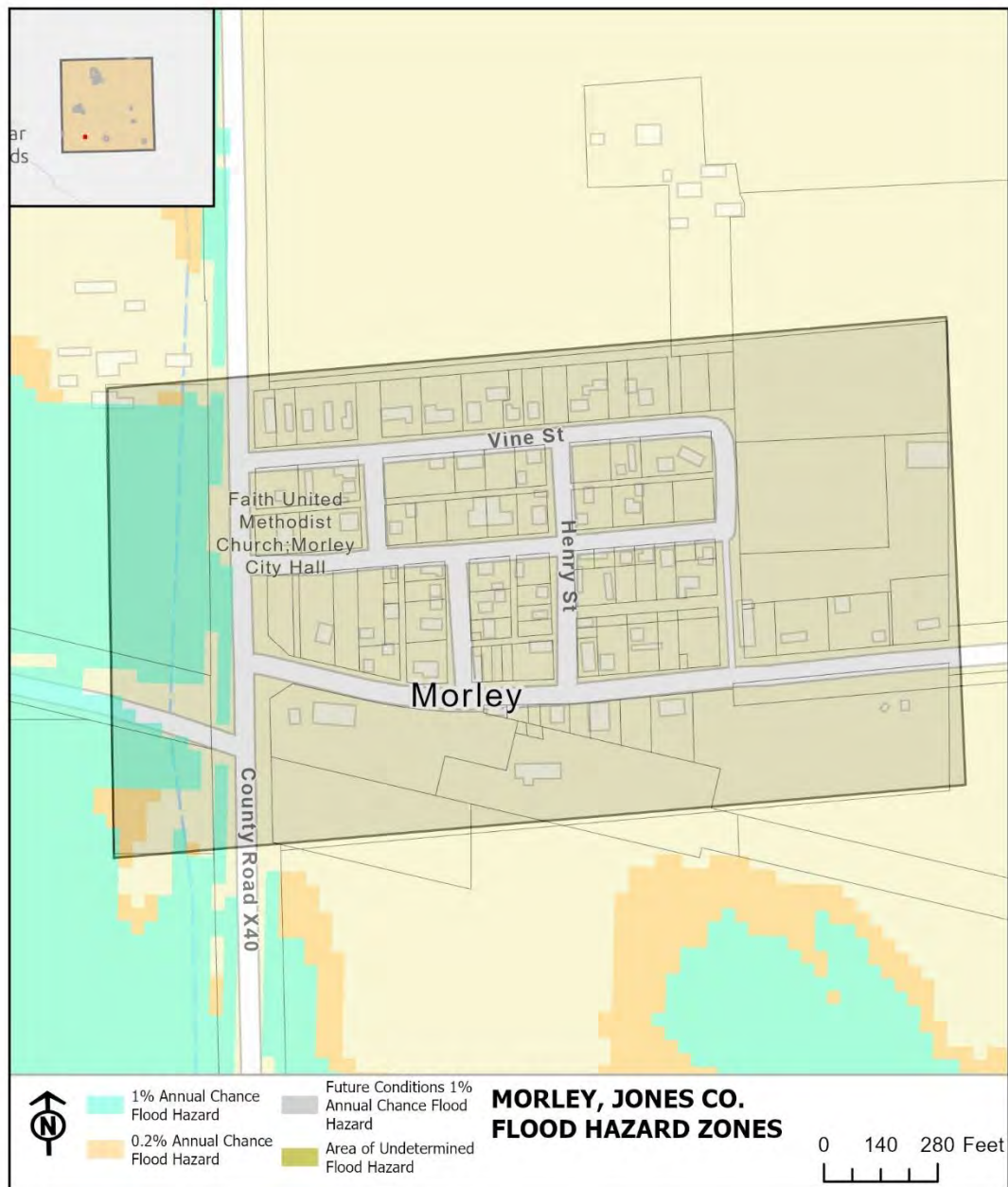
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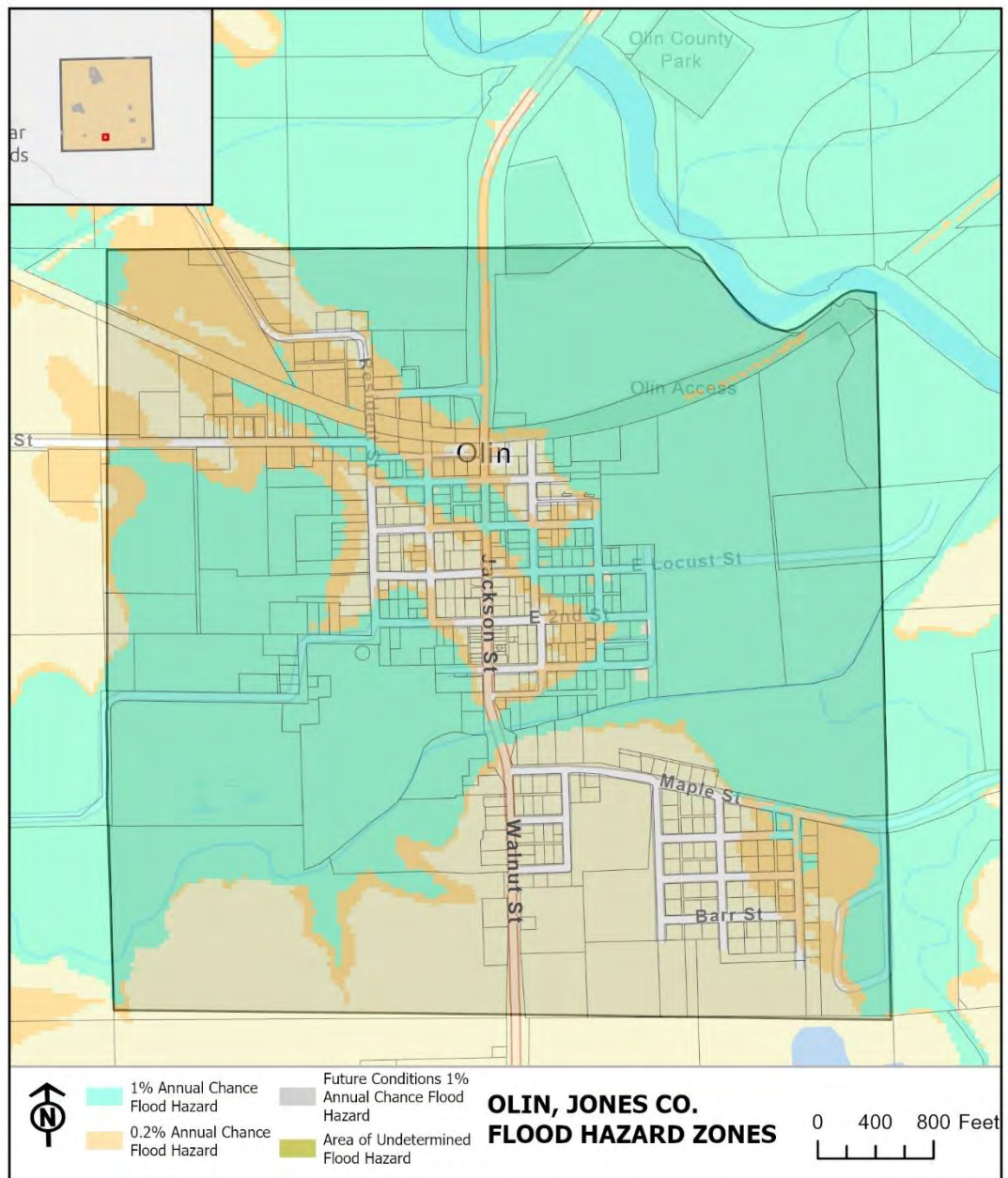
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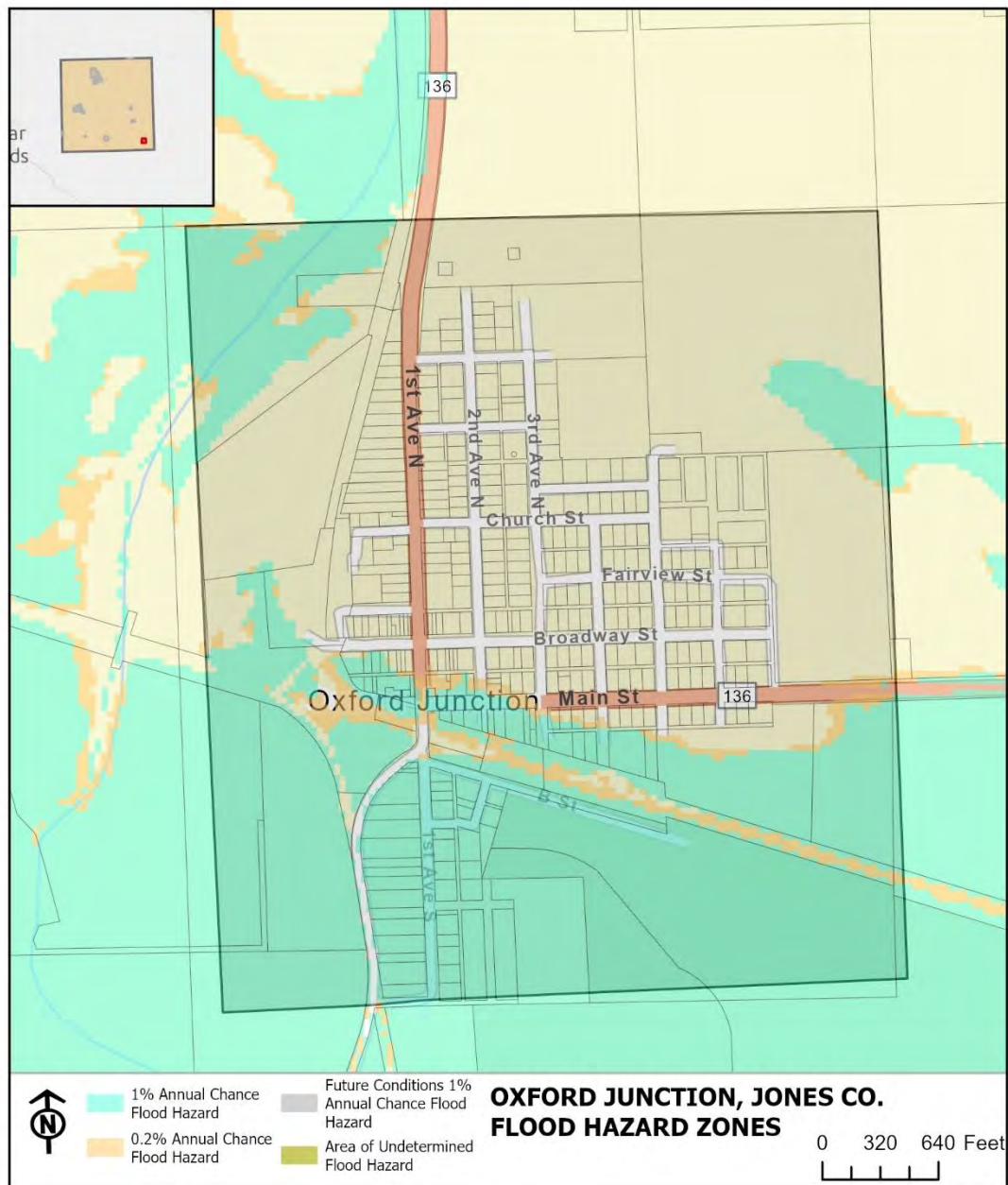
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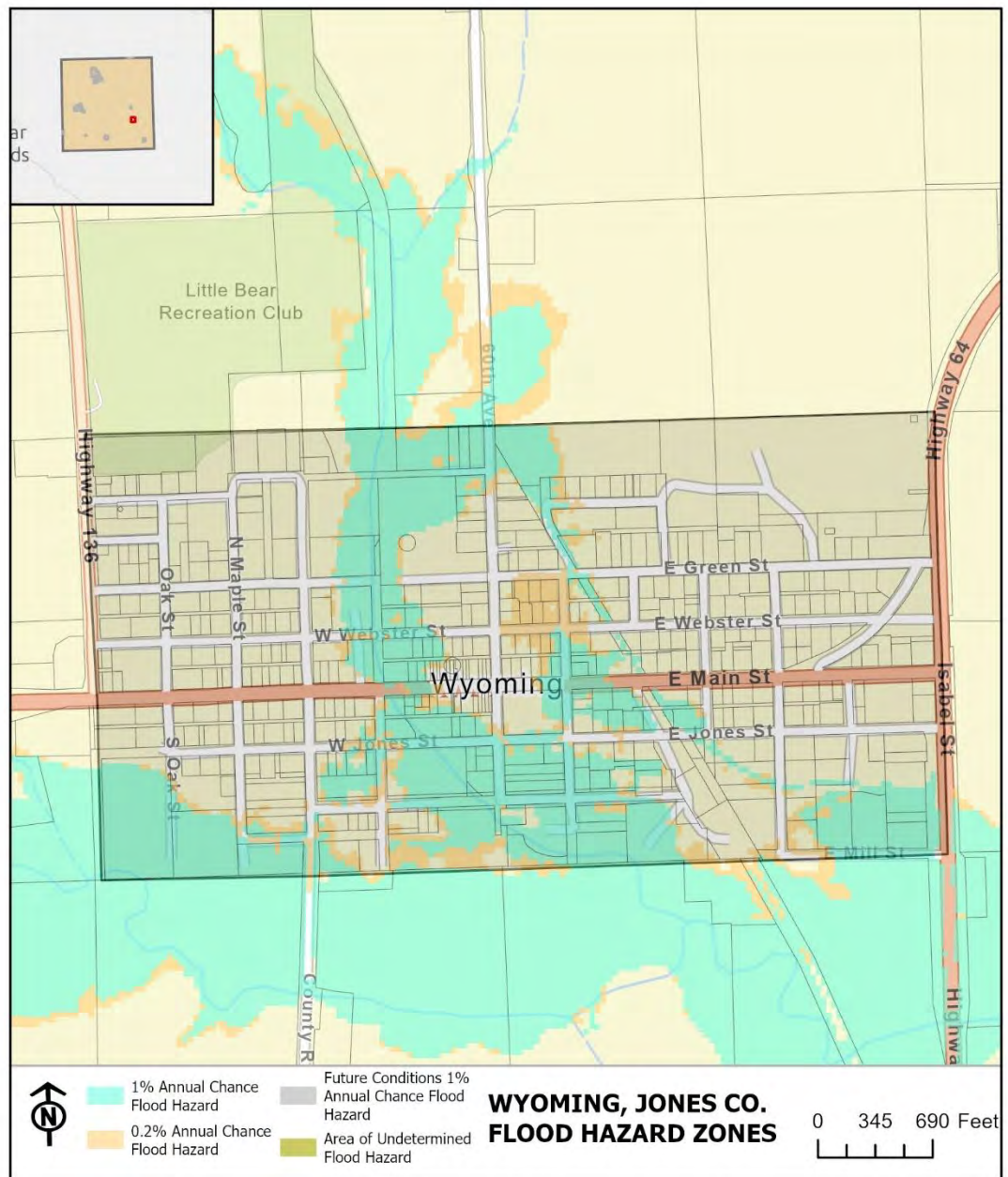
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2.5 Transportation Infrastructure

2.5.1 City Streets

The planning area is a primarily rural area with small towns, and its city streets reflect this character. The main streets offer a traditional small-town feel, featuring a mix of older buildings and modern structures. Streets are well-maintained, lined with local businesses, and traffic is generally light, with plenty of parking available. Residential

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neighborhoods often have tree-lined, quieter streets with sidewalks, creating a peaceful atmosphere. Some streets may have an older, charming appearance, with a mix of modern and vintage elements. Larger highways provide smooth travel between communities.

In smaller towns, streets are narrow and very quiet, catering mostly to local traffic, with paved roads often bordering grassy areas or farmland. Rural roads outside the towns frequently transition to gravel or dirt, especially near farms and remote areas. These roads can be dusty or muddy depending on the weather and are narrower than those in town centers. Paved county highways connect the larger communities, generally offering good road conditions and scenic views of the rolling countryside. Traffic throughout the county is minimal, making commutes stress-free. However, during the winter, snow and ice can make rural roads more challenging, though main roads and highways are typically cleared efficiently.

2.5.2 Highways

Jones County, although not serviced by an interstate, is connected by several important highways, providing crucial routes for transportation, commerce, and tourism. US Highway 151 is a key four-lane divided highway linking the cities of Anamosa and Monticello to Cedar Rapids and Dubuque. This route is frequently used by commercial services, commuters, and tourists. Additionally, US Highway 64 runs through the central part of the county, connecting Anamosa with Maquoketa. Several state highways also run through Jones County, including Highway 1, which connects US 151 near Anamosa to Martelle, Iowa City, and Kalona; Highway 38, which runs north-south through the county, connecting Hopkinton, Monticello, Olin, and Tipton; and Highway 136, which intersects with US 151 near the northern county line and US 64 in Wyoming, continuing toward Oxford Junction and Clinton. All the communities in Jones County have access to either a state or US highway, ensuring they are well-connected for local and regional travel.

2.5.3 Accessibility

Jones County, Iowa, has limited mass transit options. The primary service is provided by the East Central Iowa Council of Governments (ECICOG), which operates rural public transit services including demand-response buses that connect various parts of the county and neighboring areas. As for shared micromobility options, Jones County does not currently offer services such as bike or scooter rentals. The transportation infrastructure primarily relies on traditional transit methods and personal vehicles. For

the most current and specific details, local government resources or transportation authorities should be consulted.

2.5.4 Airports

Jones County has three landing facilities, with the Monticello Municipal Airport being the only public one, located just southeast of Monticello. This airport serves general aviation needs for the region. In addition to this, the Jones Regional Medical Center in Anamosa operates a heliport, which is essential for medical emergencies and quick transport. The third facility is Lerch's private landing strip, situated near Martelle, on the border with Linn County. For commercial air travel, residents must rely on nearby airports in Cedar Rapids and Dubuque, which offer passenger services from major carriers. This mix of public and private facilities ensures that both medical and general aviation needs are met in Jones County, while access to larger airports in neighboring cities provides broader connectivity for commercial flights.

2.5.5 Utilities

Jones County, Iowa, is served by a comprehensive array of utilities that ensure residents and businesses have access to essential services. The county's electric needs are met by several providers, including Alliant Energy, which delivers reliable power throughout the region. For natural gas, the majority of the county is serviced by Black Hills Energy, providing an essential resource for heating and energy. Water and sewer services are managed locally by municipal systems in various communities, ensuring clean and safe water supply and effective waste management. Additionally, Jones County benefits from broadband and telecommunications services provided by several regional and local companies, enhancing connectivity and access to digital resources. These utilities are integral to supporting both the daily needs of residents and the operational requirements of local businesses, contributing to the overall quality of life and economic vitality in the county.

2.6 Demographics

According to the 2020 Census Bureau data, the planning area has an official population of 20,646. Unofficial population reports from World Population Review have reported the 2024 population to be 20,851, a 1% increase. While most data is provided from 2020 and 2022, the following tables will analyze the past growth at a minimum of five (5) years from either their 2020 or 2022 data.

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Jones County	Prior	2020/22	% Change
Population	20,638 (2010)	20,646	+0.03%
Median Age	43.6 (2017)	43.4	-0.46%
Total Housing Units	8,911 (2010)	8,871	-0.45%
Housing Occupancy Rate	8,181 (2010)	8,113	-0.83%
% of Housing Units with no Vehicles Available	1.0% (2017)	1.4%	+40%
Median Home Value	\$130,700 (2017)	\$165,200	+26.7%
Unemployment Rate	2.6% (2017)	1.9%	-26.92%
Mean Travel Time to Work (Minutes)	24.6 (2017)	25.4	+3.25%
Median Household Income	\$58,391 (2017)	\$68,781	+17.79%
% of Individuals Below Poverty Level	11.4% (2017)	11.4%	0%
% Without Health Insurance	4.7% (2017)	2.9%	-38.3%
Average Household Size	2.32 (2017)	2.42	+4.31%
% of Population Over 25 with High School Diploma or Higher	92.3% (2017)	94.3%	+2.17%
% of Population Over 25 with Bachelor's Degree or Higher	11.7% (2017)	22.5%	+92.31%
% with Disability	12.3% (2017)	13.1%	+6.5%
% Speak English less than "Very Well"	0.4%	0.4%	0%

The following compares the demographics between Jones County, the State of Iowa, and the United States.

Demographics	County	Iowa	US
Population	20,646	3,190,369	331,449,281
Median Age	43.4	38.9	39.0
Total Housing Units	8,871	1,412,789	140,498,736
Housing Occupancy Rate	8,113	1,330,995	126,817,580
% of Housing Units with no Vehicles Available	1.4%	2.5%	4.4%
Median Home Value	\$165,200	\$194,600	\$320,900
Unemployment Rate	1.9%	2.9%	4.3%
Mean Travel Time to Work (Minutes)	25.4	19.7	26.4
Median Household Income	\$68,781	\$69,588	\$74,755
% of Individuals Below Poverty Level	11.4%	11.0%	12.6%
% Without Health Insurance	2.9%	4.5%	8.0%
Average Household Size	2.42	2.33	2.50
% of Population Over 25 with High School Diploma or Higher	94.3%	93.4%	89.6%

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Demographics	County	Iowa	US
% of Population Over 25 with Bachelor's Degree or Higher	22.5%	32.3%	35.7%
% with Disability	13.1%	12.8%	13.4%
% Speak English less than "Very Well"	0.4%	3.6%	8.4%

The following is a breakdown of the population by born sexual orientation and by race.

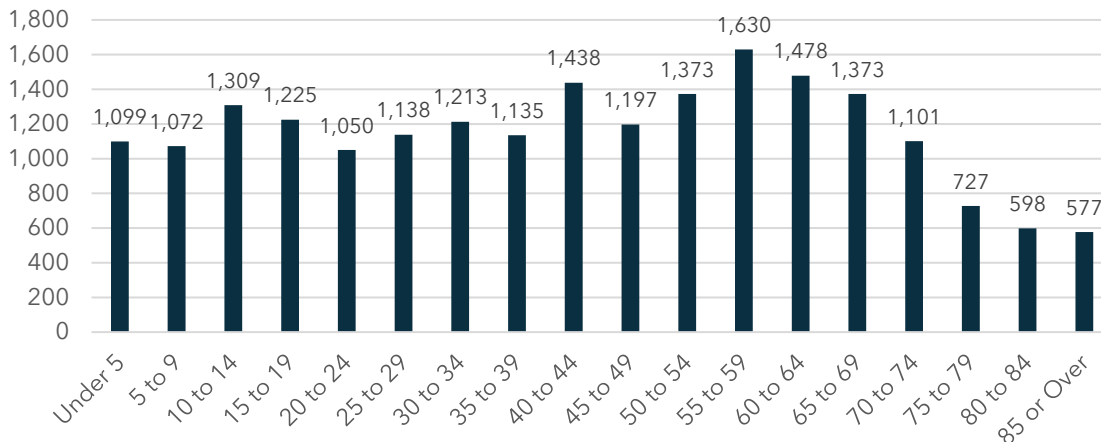
Jones County	Population	%
Total Population	20,646 (2020)	100%
White, Not Hispanic	19,002	92.04%
Hispanic or Latino	497	2.41%
Black	437	2.12%
Asian	58	0.28%
American Indian and Alaska Native	53	0.26%
Native Hawaiian and Other Pacific Islander	2	0.01%
Some Other Race	63	0.31%
Two or More Races	534	2.59%

Jones County	Population	%
Total Population	20,733 (2022)	100%
Male	10,828	52.22%
Female	9,905	47.78%

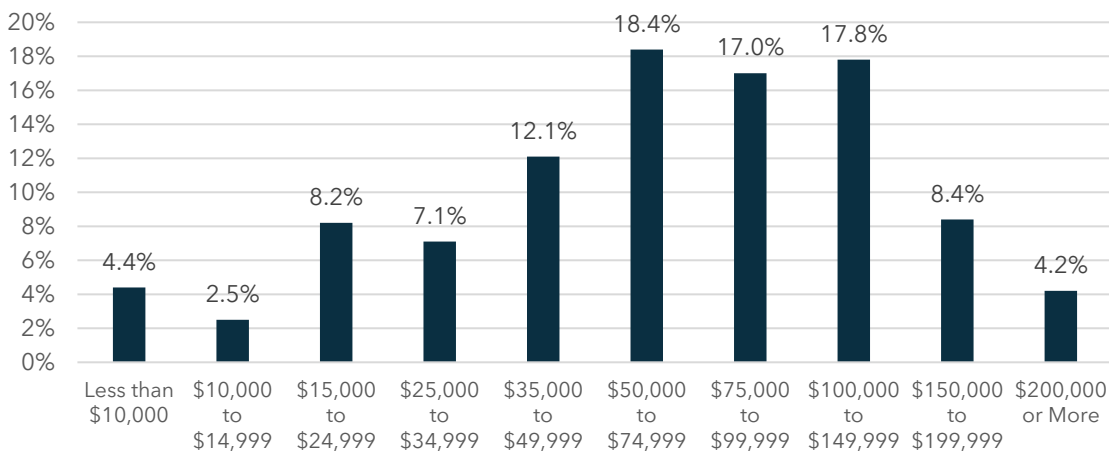
Type of Housing Units	Total	%
Occupied Total Housing Units	8,062	100%
1-Unit Detached	6,626	82.19%
1-Unit Attached	218	2.70%
2 Units	187	2.32%
3 or 4 Units	184	2.29%
5 to 9 Units	131	1.62%
10 or More Units	302	3.75%
Mobile Home or Other	414	5.14%

Jones County, Iowa, has a diverse demographic breakdown by age and household income. In terms of age, the largest group consists of individuals aged 35 to 44 years (2,577 people), followed by those 45 to 54 years (2,538). The county also has a significant population of seniors, with 2,394 residents aged 65 to 74 years, and 1,866 aged 75 and older.

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Regarding household income, the median household income in the county is \$68,781, slightly lower than the state median. Among households, those led by individuals aged 45 to 64 report the highest median income at \$90,957. Younger households, especially those under 25, have the lowest median income at \$51,462, while those 65 and older report \$59,329.



2.7 Social Vulnerability

Local vulnerability to disasters is shaped by more than just geographic exposure to hazards; social and economic factors like race, age, income, renter status, or institutionalized living play a crucial role in a community's ability to prepare for, respond to, and recover from disasters. The concept of social vulnerability explains why different communities can experience the same physical impacts from a hazard event, yet recover at different rates. This disparity arises from the community's access to resources and services, not from individual deficiencies.

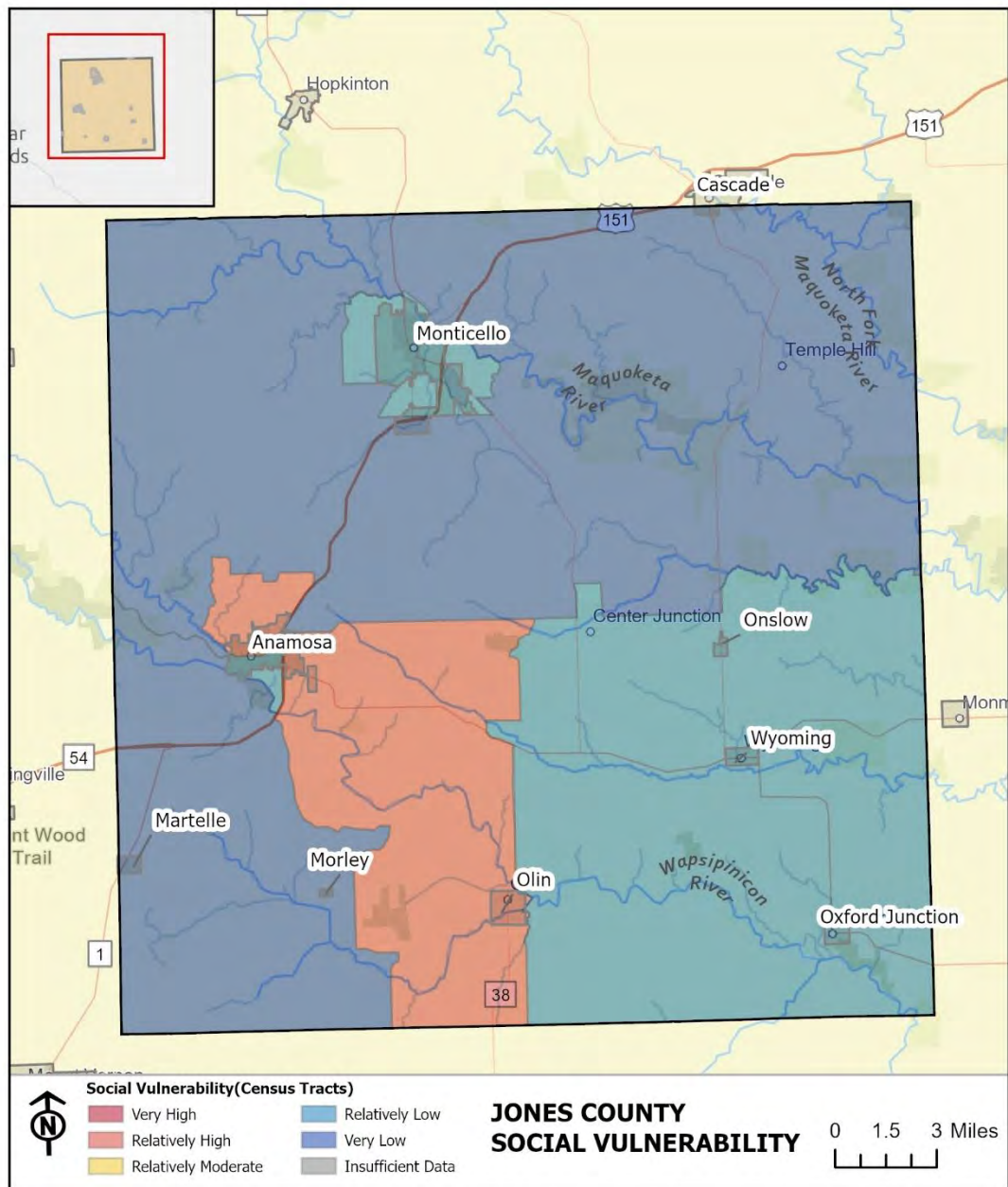
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It is essential to use the term vulnerability to describe communities at risk from specific hazards, such as high vulnerability to wildfires or floods, rather than applying it directly to individuals. Labeling people as "vulnerable" risks framing them through a deficit lens, implying a lack of personal responsibility. In reality, vulnerability results when a system fails to ensure equitable access to resources or services needed to cope with disasters. Barriers amplified by social and economic factors, like those mentioned above, are what hinder individuals and communities from adequately preparing for and recovering from disasters.

Incorporating social vulnerability assessments into local disaster risk strategies allows for more targeted mitigation actions. By identifying areas with heightened vulnerability, communities can ensure that the needs of all members, particularly the most sensitive groups, are considered during hazard prioritization and emergency management efforts. This approach fosters more equitable and inclusive resilience planning.

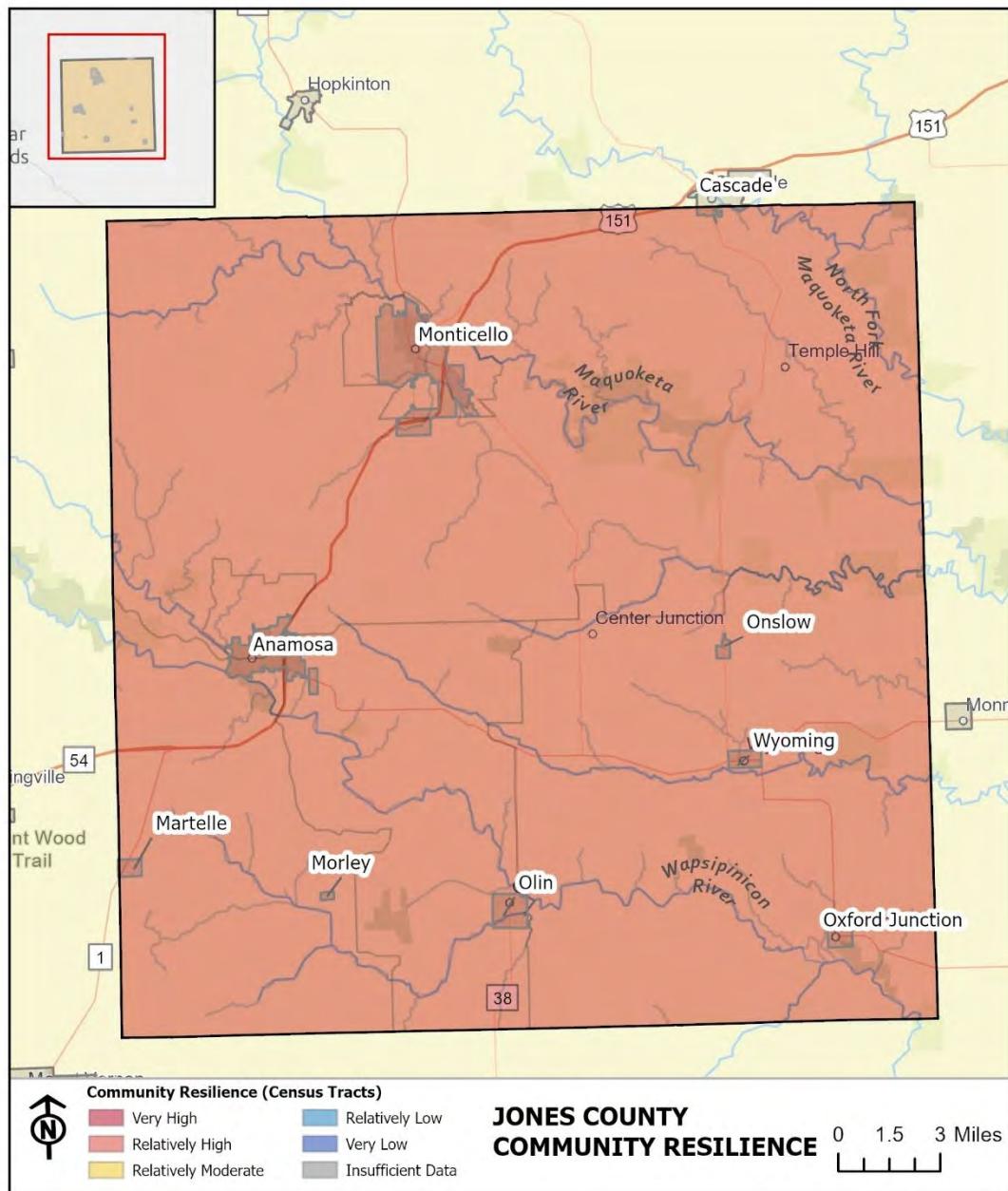
For this plan, the National Risk Index's social vulnerability values are used. This is determined by analyzing 16 socioeconomic variables from the Centers for Disease Control/Agency for Toxic Substances and Disease Registry (CDC/ATSDR). The following are the factors that determine the social vulnerability score:

- Below 150% Poverty
- Unemployed
- Housing Cost Burden
- No High School Diploma
- No Health Insurance
- Aged 65 & Older
- Aged 17 & Younger
- Civilian with a Disability
- Racial & Ethnic Minority Status
- Multi-Unit Structures
- Mobile Homes
- Crowding
- No Vehicle
- Group Quarters
- Single-Parent Households
- English Language Proficiency



Overall, Jones County received a score of 20.6 for a relatively low social vulnerability; 79.4% of the U.S. counties have a higher score.

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2.8 Economy

Jones County, Iowa, has a mixed economy that blends agricultural, manufacturing, and service sectors, reflecting the rural character of much of the Midwest. Agriculture plays a central role, with corn and soybean farming dominating the landscape. Livestock farming, especially cattle and hog production, is also significant. The county's agricultural output supports local agribusinesses, such as grain storage and processing facilities.

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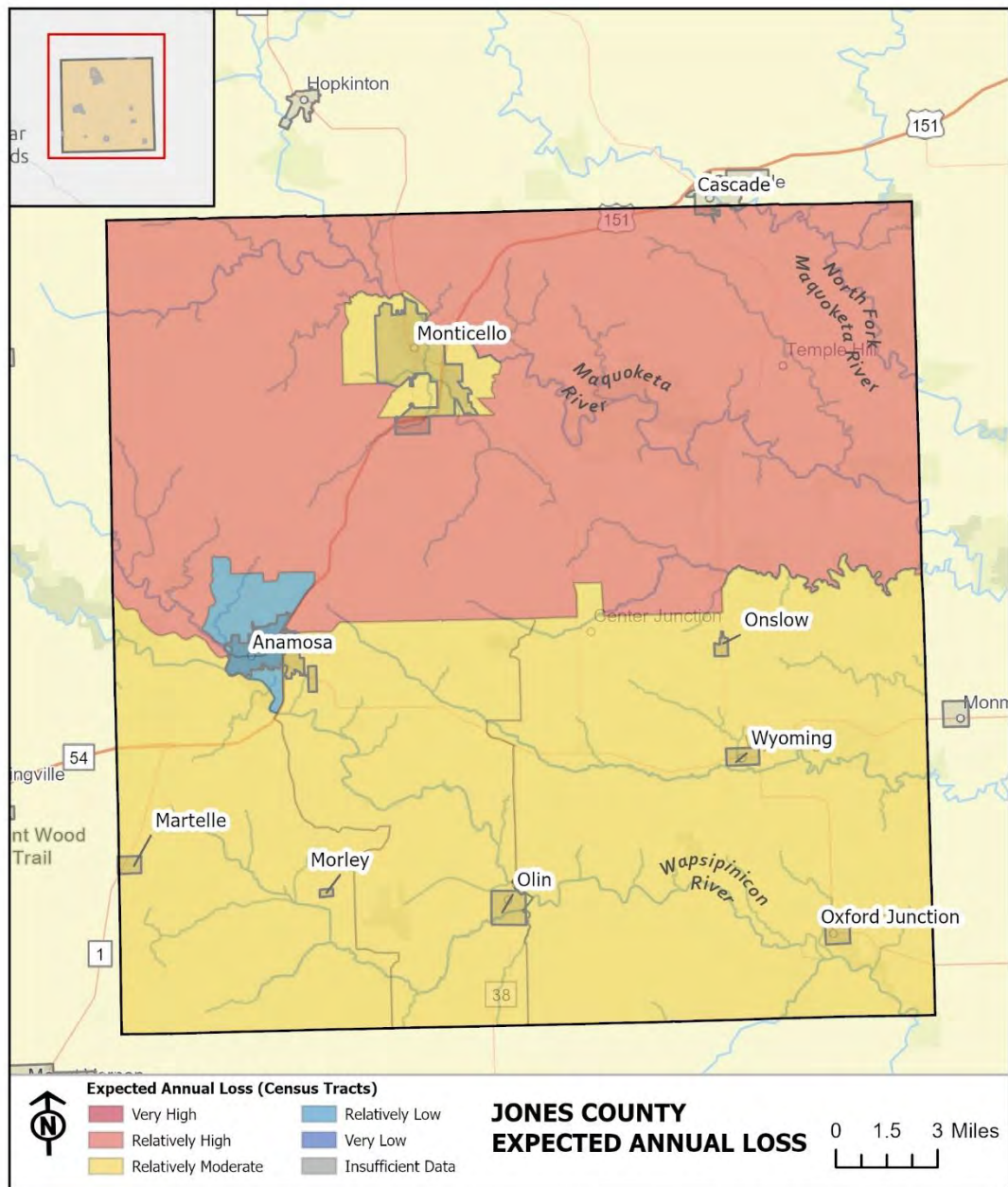


Manufacturing contributes to the local economy, particularly through small to mid-sized manufacturing firms that produce machinery, metal products, and building materials. These industries provide jobs and serve as critical components of the regional supply chain. Jones County's location near the Cedar Rapids metropolitan area helps local businesses access broader markets, facilitating trade and transportation.

In recent years, there has been growth in the services sector, with healthcare, retail, and education serving as prominent employment sources. An increasing number of residents commute to nearby cities for work, benefiting from Jones County's proximity to larger urban centers while maintaining a rural lifestyle. The county's economy is also supported by tourism, driven by its natural areas and historical sites, such as the Wapsipinicon State Park and the Grant Wood Art Colony, which draw visitors interested in outdoor recreation and cultural heritage.

Overall, the economy of Jones County is diversified, combining traditional agricultural practices with industrial and service-based employment, contributing to a stable local economic environment.

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2.8.1 Income

Jones County, Iowa, has a median household income of approximately \$65,000, which is slightly below the state median. The county's income distribution reflects its rural economy, with many residents employed in agriculture, manufacturing, and service industries. While the median income provides a general benchmark, there is income variation across the county. Some households involved in more specialized farming or those commuting to nearby urban centers like Cedar Rapids for higher-paying jobs have

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higher income levels, while households relying solely on local agricultural or retail jobs may fall below the median.

Approximately 10-12% of Jones County residents live below the poverty line, which is comparable to state and national averages. The per capita income in the county is around \$32,000. Income sources are diverse, with many households earning from multiple streams, including wages, self-employment (especially in farming), and some social security or retirement benefits. While agriculture continues to be a significant source of income for some, service-based employment and manufacturing jobs have become increasingly important for local households.

Overall, income in Jones County is characteristic of rural Midwestern economies, with a reliance on agriculture and blue-collar jobs, but with opportunities expanding in the service sector and through employment in nearby urban areas.

2.8.2 Occupations and Industries

In Jones County, Iowa, the workforce is distributed across several key industries, reflecting both its rural roots and its evolving economic landscape. Agriculture remains a foundational industry, with many residents engaged in farming, particularly in crop production (corn and soybeans) and livestock operations. This agricultural base supports related occupations in agribusiness, such as farm management, equipment operation, and grain processing. Manufacturing is the second-largest sector in Jones County, accounting for a significant portion of local employment, with workers typically involved in the production of machinery, metal products, and construction materials. These manufacturing jobs often require technical skills and provide stable employment, especially in towns like Anamosa and Monticello.

The healthcare and social assistance sector is another major employer, driven by the county's aging population. Hospitals, nursing homes, and clinics provide a variety of jobs, including roles in nursing, administration, and home healthcare. The education sector also plays a significant role, with local schools employing a large number of residents. Retail trade and food services contribute to the local economy, with jobs in small businesses, restaurants, and service-oriented industries catering to the daily needs of the community. Additionally, many residents commute to nearby cities like Cedar Rapids and Dubuque, finding employment in professional, technical, and managerial roles.

This occupational landscape reflects the agricultural heritage of Jones County while showing growth in healthcare, education, and service industries. The diversity of

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employment opportunities, ranging from farming to manufacturing and services, provides a stable economic base for the county and accommodates a wide range of skill levels.

2.8.3 Future Population Growth and Development Trends

Jones County, Iowa, is experiencing modest population growth, with current projections indicating a slow but steady increase over the next few years. The county’s population, around 20,500 residents, is expected to grow at a rate slightly below the state average, reflecting a broader trend seen in many rural areas. Much of the growth is driven by the county’s proximity to larger urban centers like Cedar Rapids and Dubuque, which attract residents seeking a rural lifestyle while maintaining access to urban employment. This has led to some residential development, particularly in towns such as Anamosa and Monticello, where new housing projects are being built to accommodate the growing population.

At the same time, Jones County is experiencing an aging population, with many younger residents leaving for education or job opportunities in larger cities. As a result, the demographic shift is expected to increase demand for healthcare services, senior housing, and social assistance programs. Development will likely focus on addressing the needs of this aging population while continuing to attract new residents through affordable housing and improved local amenities.

Land use trends in the county show a focus on balancing agricultural preservation with new residential and light commercial development. Farmland remains a critical component of the county's economy, and there is growing interest in sustainable land use practices to ensure that agricultural areas remain productive. Infrastructure improvements, particularly in roads and utilities, will be key to supporting any population increases, especially in areas near the county’s main towns and major highways.

2.9 Capability Assessment

Element Addressed in Section
Element C1. Does the plan document each jurisdiction’s existing authorities, policies, programs and resources and its ability to expand on and improve these existing policies and programs? (Requirement 44 CFR § 201.6(c)(3)), including requirement C1-a and C1-b .



Element Addressed in Section

Element C2. Does the plan address each jurisdiction’s participation in the NFIP and continued compliance with NFIP requirements, as appropriate? (Requirement 44 CFR § 201.6(c)(3)(ii)), including requirement **C2-a**.

A comprehensive capability assessment was conducted to evaluate the planning resources, policies, staffing, and regulatory tools available among stakeholders within the planning area. This assessment, facilitated through a detailed survey, aimed to identify existing strengths, gaps, and opportunities for enhancing hazard mitigation and community resilience. The survey analyzed the presence and implementation of critical plans, such as Capital Improvement Plans, Climate Change Adaptation Plans, Community Wildfire Protection Plans, and Comprehensive or Master Plans, which are essential for guiding community growth, safety, and long-term risk reduction. Additionally, it examined the availability of codes and ordinances governing building practices, land use, floodplain management, and hazard-specific regulations, as well as the roles of key personnel, including Chief Building Officials, Civil Engineers, and Floodplain Administrators.

The assessment highlights that these existing capabilities are well-positioned to support the mitigation strategy through the effective alignment and integration of resources, programs, and expertise across participating jurisdictions. Policies such as zoning ordinances, building codes, and hazard-specific regulations provide a solid framework to guide mitigation actions. Operational systems, including emergency response plans and interagency agreements, ensure resources can be coordinated and mobilized efficiently. Financial capabilities, including dedicated funding streams, grants, and local general fund budgets, enable the implementation of prioritized mitigation projects. Furthermore, trained personnel and subject matter expertise allow jurisdictions to apply best practices, innovative solutions, and data-driven strategies to address risks effectively. By leveraging these existing capabilities, stakeholders can build a stronger foundation for resilience, ensuring a coordinated and cost-effective approach to mitigating current and future hazards.

2.9.1 Plans

Capital Improvements Plan (CIP)

Capital Improvement Plans (CIPs) are long-term planning tools that outline a government or organization's projected investments in significant physical assets and infrastructure. Typically covering a 5- to 10-year period, these plans include major projects like road repairs, water system upgrades, building renovations, new facilities,

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and other infrastructure improvements that require substantial financial resources and strategic prioritization. CIPs help ensure that essential infrastructure is maintained, replaced, or expanded as needed to support community needs, enhance safety, and improve quality of life.

In the context of mitigation, CIPs are crucial because they incorporate infrastructure projects that can reduce a community's vulnerability to hazards and increase resilience to disasters. For example, CIPs may include flood control and stormwater management projects, such as installing stormwater systems, building levees, or upgrading drainage infrastructure to manage heavy rainfall and reduce flooding risks. This proactive investment helps mitigate flood hazards, protecting properties and lowering recovery costs after storms. In areas prone to earthquakes, a CIP might allocate funds for seismic retrofitting of public buildings, bridges, or critical infrastructure, reducing the risk of collapse and ensuring community safety. For wildfire-prone areas, CIPs may fund projects like creating firebreaks, installing fire-resistant roofing on public buildings, or establishing water storage facilities to support firefighting efforts.

Transportation infrastructure is also commonly included in CIPs, with a focus on maintaining and strengthening roads and bridges, which are vital for evacuation routes and emergency response. Well-maintained roads and bridges can support quicker, safer evacuation and ensure that emergency services can access impacted areas during a disaster. Utility upgrades are another key aspect, where CIPs may prioritize modernizing water, electricity, and gas utilities, such as burying power lines to reduce outage risks from storms or enhancing water and sewer systems to handle extreme weather events, helping to prevent contamination or service disruptions.

By including mitigation-focused projects, CIPs enable communities to strategically reduce future disaster impacts, protect critical infrastructure, and improve recovery capabilities. A well-integrated CIP ensures that communities not only maintain their infrastructure but also adapt and prepare it to withstand local hazards, ultimately saving lives, protecting property, and reducing long-term recovery costs.

The assessment reveals that most jurisdictions and school districts in Jones County, Iowa, lack a formal Capital Improvements Plan (CIP). Specifically, the City of Olin, Jones County, City of Onslow, City of Monticello, City of Anamosa, City of Morley, St. Patrick School, Sacred Heart Grade School, Midland Community School District, City of Oxford Junction, and City of Martelle reported they do not have a CIP in place. Among those that do, the Olin Community School District implemented a CIP on December 20, 2023, authored by Mark Dohmen, which addresses hazards through a specific policy (Policy 802.04). The City of Wyoming also has a CIP, authored by MSA Professional Services and

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implemented on October 23, 2019. While the Olin Community School District's CIP includes hazard mitigation considerations, the outdated status of Wyoming's CIP may limit its effectiveness in addressing current hazards. Overall, these findings suggest that Jones County could benefit from more comprehensive and updated CIP efforts, particularly with an emphasis on hazard mitigation.

Climate Change Adaptation Plan

Climate Change Adaptation Plans are strategic frameworks that guide communities, organizations, and governments in adjusting to the current and anticipated impacts of climate change. These plans identify vulnerabilities to climate-related hazards—such as increased frequency of extreme weather events, rising sea levels, prolonged droughts, and shifting ecosystems—and propose actions to reduce these risks. Adaptation measures often include modifying infrastructure, updating land-use policies, preserving natural buffers, and enhancing water management systems to withstand future climate conditions. Unlike mitigation, which aims to reduce greenhouse gas emissions and limit the extent of climate change, adaptation focuses on preparing for and managing the impacts of climate change that are already occurring or projected to occur.

Adaptation plans are closely related to mitigation because they often include measures that enhance resilience to natural hazards, thereby reducing the severity of disaster impacts. For instance, building seawalls or restoring wetlands as a buffer against sea-level rise can protect coastal communities from flooding while also preserving ecosystems that absorb carbon. Similarly, upgrading infrastructure to withstand higher temperatures or intense storms helps ensure that roads, bridges, and utilities remain functional during extreme weather events, thereby reducing recovery costs and minimizing disruption. Integrating climate change adaptation with traditional hazard mitigation strategies ensures that communities are prepared not only for current risks but also for evolving hazards due to climate change, resulting in more sustainable and resilient communities in the long term.

The assessment indicates that none of the jurisdictions or school districts in Jones County, Iowa, currently have a formal Climate Change Adaptation Plan in place. This includes all planning stakeholders. This absence of climate adaptation planning across these entities highlights an area where increased focus on climate resilience and adaptation strategies could be beneficial, particularly in light of growing climate-related risks.

Community Wildfire Protection Plan (CWPP)

Community Wildfire Protection Plans (CWPPs) are collaborative documents that outline strategies for reducing wildfire risks in areas prone to wildland fires. Developed through partnerships between local governments, fire departments, state and federal agencies, and community stakeholders, CWPPs assess wildfire hazards in specific communities, identify vulnerable areas, and prioritize actions to enhance fire resilience. These plans typically include recommendations for fuel reduction, such as clearing flammable vegetation near homes, creating defensible spaces, and managing forests to reduce fire intensity. They also focus on improving emergency response, strengthening building codes to make structures more fire-resistant, and raising public awareness about wildfire risks and preparedness.

CWPPs play a crucial role in mitigation by proactively addressing factors that increase wildfire vulnerability and aiming to reduce the severity of future wildfires. By identifying and implementing fire-prevention measures, these plans help protect lives, property, and natural resources. Moreover, CWPPs can qualify communities for funding and technical assistance from federal and state wildfire mitigation programs, enhancing their ability to implement effective prevention projects. In the broader scope of hazard mitigation, CWPPs contribute to community resilience by reducing potential fire-related losses and preparing residents for a more effective response, ultimately supporting safer, more sustainable communities in wildfire-prone areas.

The assessment shows that none of the planning stakeholders in Jones County, Iowa, currently have a Community Wildfire Protection Plan in place. This observation provides an opportunity for stakeholders to identify potential areas where wildfire preparedness might be further developed. Establishing such plans could enhance local resilience and support community safety initiatives, addressing wildfire risks that may be relevant to the county's future planning efforts.

Comprehensive or Master Plans

Comprehensive or master plans are strategic, long-term planning documents used by cities, towns, and counties to guide growth and development in a structured and sustainable way. These plans typically cover a wide range of community aspects, including land use, housing, transportation, economic development, public facilities, and environmental protection. By setting a vision for the community's future, comprehensive plans provide a roadmap for decision-making over a 10- to 20-year period, ensuring that growth aligns with the community's goals and values. Developed with input from residents, businesses, and local government stakeholders, these plans help shape

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policies, zoning regulations, and development practices to foster orderly and balanced development.

In the context of mitigation, comprehensive plans play an essential role by incorporating strategies to reduce risks from natural and human-made hazards. By addressing areas like flood-prone zones, wildfire-prone areas, and critical infrastructure locations, these plans can guide development away from high-risk areas, enhance building codes, and encourage resilient infrastructure design. Many comprehensive plans also promote sustainability practices, such as green infrastructure and climate adaptation, which help communities prepare for and adapt to long-term environmental changes. Ultimately, by embedding mitigation principles into comprehensive plans, communities build a safer and more resilient future, reducing potential losses from disasters and supporting sustainable growth.

The assessment reveals that several planning stakeholders in Jones County, Iowa, have Comprehensive or Master Plans in place, although the scope and currency of these plans vary. The City of Olin and Jones County have plans, with Jones County's authored by the Land Use department and updated as recently as June 27, 2023; however, stakeholders indicated uncertainties about whether the plan addresses hazards. The City of Onslow has a plan by RDG Crose Gardner Shukert, last updated in August 2019, with portions originally dating back to 2003, which may limit its applicability for current needs.

In the City of Anamosa, a Comprehensive Plan, jointly authored by ECICOG and the Anamosa Planning and Zoning Commission, was last adopted in 2006 and is set to expire in 2026. The City of Martelle has a plan in place by ECICOG, implemented on December 14, 2021, which includes some hazard considerations. Meanwhile, St. Patrick School has emergency and crisis plans, though these are primarily focused on specific threats such as floods, storms, fires, earthquakes, and active threats, rather than a traditional comprehensive or master planning approach. Lastly, Olin Community School District confirmed having a plan addressing hazards, authored by Mark Dohmen and implemented on June 24, 2024.

These findings suggest a range of approaches and levels of detail in planning across jurisdictions and institutions, with some plans incorporating hazard elements and others primarily addressing land use or specific crises. The variety in update timelines and focus areas highlights opportunities for stakeholders to review and potentially enhance their planning efforts to ensure they address current and future community needs comprehensively.

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Continuity of Operations Plan

Continuity of Operations Plans (COOP) are essential strategies developed by organizations, including government agencies, businesses, and essential service providers, to ensure that critical functions and services can continue or be quickly restored following a disruption. These disruptions can stem from natural disasters, cyber incidents, equipment failures, or other emergencies that threaten to halt normal operations. A COOP typically outlines procedures for maintaining essential functions, identifying alternate facilities, designating leadership roles, and establishing communication protocols in the event of an incident. By planning for staff reassignments, technology backups, and essential resource requirements, COOPs ensure that organizations can minimize downtime and swiftly recover from unexpected interruptions.

In terms of mitigation, COOPs are crucial because they proactively address potential operational vulnerabilities before an incident occurs. By identifying critical functions and dependencies in advance, organizations can implement safeguards, such as redundancies in technology and supply chains, to reduce the risk of a total shutdown. This approach not only protects the organization's operations but also helps protect the broader community that relies on these services—whether it's emergency response, healthcare, utilities, or other essential functions. Ultimately, COOPs enhance resilience by equipping organizations to handle disruptions more effectively, minimizing the cascading effects that could exacerbate a crisis, and supporting faster recovery and continuity of services in the face of disasters.

The assessment shows that among the planning stakeholders in Jones County, Iowa, only the City of Wyoming currently has a Continuity of Operations Plan (COOP) in place. This plan, authored by the Wyoming City Council, was implemented on February 12, 2020, and addresses some hazard considerations. The plan has been updated as recently as 2023. Other jurisdictions and school districts indicated they do not have a COOP, presenting an opportunity for stakeholders to consider developing continuity plans that can enhance operational resilience during disruptions.

Economic Development Plan

Economic Development Plans are strategic frameworks created by local governments, regional agencies, or economic development organizations to promote economic growth, job creation, and improved quality of life within a community. These plans often focus on attracting new businesses, supporting existing industries, improving infrastructure, enhancing workforce skills, and diversifying the local economy. Economic

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Development Plans usually include an analysis of local economic strengths and weaknesses, target industries, and specific actions to achieve sustainable economic growth. They aim to create a resilient, vibrant economy that can adapt to changing market conditions, attract investments, and improve living standards for residents.

In terms of mitigation, Economic Development Plans play a crucial role by promoting diversified and resilient economic structures that are less vulnerable to disasters and disruptions. A well-rounded local economy with diverse industries is better equipped to absorb the impacts of hazards, such as natural disasters or economic downturns, because it doesn't rely too heavily on a single sector. Furthermore, these plans often encourage investments in resilient infrastructure, like improved transportation networks and utility systems, which enhance the community's ability to withstand and recover from disruptive events. By aligning economic growth with hazard mitigation goals, Economic Development Plans help create sustainable, disaster-resilient communities that can rebound more effectively after adverse events, ultimately supporting long-term stability and prosperity.

The assessment reveals that only two planning stakeholders in Jones County, Iowa, have an Economic Development Plan in place. The Olin Community School District implemented its plan on October 23, 2023, authored by Mark Dohmen, and includes hazard considerations under Policy 705.01. Similarly, the City of Wyoming has an Economic Development Plan, developed by ECICOG and implemented on October 23, 2019, though details on whether it addresses hazards are unknown. Other jurisdictions and school districts do not currently have an Economic Development Plan, presenting an opportunity for expanded economic planning efforts across the county to support sustainable growth and resilience.

Land Use Plan

Land Use Plans are strategic documents that outline how land within a community should be developed and used, guiding decisions on zoning, housing, transportation, green spaces, commercial areas, and industrial zones. Created by local or regional planning agencies, these plans are based on an assessment of current land use, projected growth, environmental considerations, and community needs. They typically aim to balance development with environmental preservation, ensuring that land resources are managed sustainably for future generations. By organizing land use in a coherent and forward-thinking manner, these plans help communities develop in ways that support economic vitality, environmental health, and quality of life.

In the context of hazard mitigation, Land Use Plans are essential tools for reducing risk and enhancing resilience. By directing development away from hazard-prone areas, such as floodplains, erosion-prone zones, and wildfire-prone regions, these plans help minimize the community's exposure to potential disasters. Land Use Plans can also incorporate green infrastructure, like wetlands and parks, which not only improve quality of life but also serve as natural buffers against floods, heat, and other hazards. By thoughtfully planning where and how growth occurs, Land Use Plans reduce vulnerabilities to natural hazards, helping communities prevent or lessen the impact of disasters.

The assessment indicates that a few jurisdictions in Jones County, Iowa, have established Land Use Plans, though these vary in their scope and recent updates. Jones County has a Land Use Plan authored by the Jones County Land Use, implemented on June 27, 2023, with no specific hazard considerations. The City of Onslow also has a Land Use Plan by RDG Crose Gardner Shukert, dating back to its original adoption in 2003, with a more recent update on August 10, 2019, but it does not address hazards. Additionally, the City of Wyoming has a Land Use Plan, created by ECICOG and implemented on October 23, 2019, which is currently undergoing updates by ECICOG to potentially enhance its scope. Other jurisdictions and school districts do not have a formal Land Use Plan in place. These findings present an opportunity for stakeholders across the county to consider land use planning as a tool to support both growth and resilience.

Emergency Operations Plan

Emergency Operations Plans (EOPs) are comprehensive frameworks designed to guide the actions and coordination of various agencies, organizations, and community stakeholders during emergency incidents. An EOP outlines responsibilities, resources, and procedures for responding to a range of potential emergencies, from natural disasters to human-caused incidents. Typically structured with sections that cover preparedness, response, recovery, and mitigation, an EOP provides clear protocols for activities such as evacuations, sheltering, communications, resource allocation, and mutual aid. This plan is often developed in coordination with local emergency services, public health departments, government agencies, and community organizations, ensuring a unified response to incidents.

In the context of hazard mitigation, EOPs play a crucial role by incorporating mitigation measures into preparedness and response strategies. Through hazard identification, risk analysis, and pre-incident planning, EOPs identify potential vulnerabilities within a community and outline actions to reduce or eliminate these risks. For instance, they may include guidelines for reinforcing infrastructure, establishing early warning systems, or

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designating safe zones. By embedding mitigation principles into emergency procedures, EOPs help communities not only respond more effectively to emergencies but also build resilience against future events, reducing the severity of impacts and enhancing recovery capabilities.

The assessment shows that several jurisdictions and school districts in Jones County, Iowa, have Local Emergency Operations Plans (EOPs) in place, though the details and focus areas vary. Jones County has an EOP implemented by the county EMA on June 27, 2023, covering sections of prevention, response, and recovery, which the City of Martelle follows. The City of Monticello has an EOP developed by a committee of school staff, law enforcement, and emergency management, last updated on August 17, addressing a range of hazards like tornadoes, blizzards, and power outages. St. Patrick School and Olin Community School District also have EOPs, with St. Patrick's authored by Diane Bradford, which focuses on flood, storms, fire, and other threats, and includes plans to evacuate students if necessary. The Olin Community School District's plan, led by Mark Dohmen, was last updated on August 27, 2023, and integrates mitigation and response strategies.

In Midland Community School District, the EOP was implemented by Dennis Martens on August 28, 2023, and includes provisions for hazard response and an upcoming update in October. The City of Oxford Junction has an EOP managed by the county EMA, which is currently being updated. The City of Wyoming also has an EOP, implemented on February 12, 2020, and identified for future updates and expansion. Meanwhile, other jurisdictions, such as the City of Olin, City of Onslow, and Sacred Heart Grade School do not currently have a Local Emergency Operations Plan in place.

This range of EOP implementation across the county highlights both established practices and opportunities for further enhancement, especially in updating and expanding plans to address a broader scope of potential hazards and ensuring consistent emergency preparedness across all stakeholders.

Stormwater Management Plan

Stormwater Management Plans are strategic documents developed by municipalities or regions to manage rainwater runoff in urban and suburban areas. These plans outline methods to collect, treat, and divert stormwater in ways that prevent flooding, reduce erosion, protect water quality, and minimize property damage. By integrating systems like retention basins, green infrastructure, permeable surfaces, and drainage networks, Stormwater Management Plans aim to handle large volumes of stormwater effectively, particularly during heavy rainfall events. These plans also address regulatory

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requirements, such as those set by the Clean Water Act, and often involve public education on minimizing pollution from runoff.

In terms of mitigation, Stormwater Management Plans are essential because they directly reduce the risk of flooding and water damage, especially as urban areas expand and impermeable surfaces increase. By controlling stormwater runoff, these plans help communities mitigate the impacts of heavy rainfall, protect critical infrastructure, and preserve natural waterways. Additionally, stormwater management contributes to climate adaptation by preparing communities for more intense rainfall patterns associated with climate change. Ultimately, Stormwater Management Plans not only protect property and infrastructure but also enhance community resilience, reducing the long-term costs and impacts associated with flood-related disasters.

The assessment indicates that the City of Wyoming is the only stakeholder in Jones County, Iowa, with a Stormwater Management Plan in place. This plan, authored by the city, was implemented on May 13, 2020, and is based on Ordinance 293, initially dated May 3, 2002. While the ordinance provides a foundation for stormwater management, it has been identified as needing updates to ensure it aligns with current best practices and hazard mitigation requirements. Other jurisdictions and school districts within the county do not have a Stormwater Management Plan, suggesting an opportunity for expanded stormwater planning to address flooding and other related concerns across the region.

Transportation Plan

Transportation Plans are strategic documents that guide the development, maintenance, and improvement of a community's transportation infrastructure, including roads, bridges, public transit, pedestrian pathways, and bike lanes. Created by local or regional transportation agencies, these plans are typically based on assessments of current transportation needs, projected population growth, economic development goals, and environmental considerations. A Transportation Plan outlines priorities for new projects, upgrades, and repairs, often spanning a long-term period of 10 to 20 years. By addressing accessibility, safety, and sustainability, these plans aim to create efficient and resilient transportation networks that support community mobility and economic vitality.

In terms of mitigation, Transportation Plans are essential because they enhance community resilience by reducing vulnerabilities in critical infrastructure. For instance, these plans may include strategies for reinforcing bridges, improving road drainage systems to prevent flooding, and designing evacuation routes that can withstand extreme weather. Transportation Plans can also incorporate alternative routes and public

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transit options, which are vital for emergency response and evacuation during disasters. By addressing potential hazards in infrastructure design and planning, Transportation Plans help communities prepare for and mitigate the impacts of natural and human-made events, ensuring that transportation networks remain safe, functional, and accessible even in times of crisis.

The assessment reveals that two planning stakeholders in Jones County, Iowa, have Transportation Plans in place. The Olin Community School District implemented a Transportation Plan on October 23, 2023, authored by Mark Dohmen, which includes hazard considerations under Policies 711.01 through 711.11. Similarly, Midland Community School District has a Transportation Plan, authored by John Stender and implemented on July 20, 2022, with provisions for weather-related hazards. This plan is scheduled for an update in October to ensure its continued relevance. Other jurisdictions and school districts in the county do not currently have a Transportation Plan, presenting an opportunity to develop plans that enhance transportation resilience and address potential hazards more broadly across the region.

Substantial Damage Plan

Substantial Damage Plans are focused strategies developed by communities to assess, manage, and mitigate severe damage to buildings and infrastructure following a disaster. Typically, these plans outline procedures to evaluate the extent of damage, particularly after events like floods, hurricanes, or earthquakes, where structures may be compromised. Under the National Flood Insurance Program (NFIP), "substantial damage" is defined as damage to a building where the repair cost equals or exceeds 50% of its pre-disaster market value. Substantial Damage Plans ensure that communities can quickly identify and inspect affected properties, determine if they require significant repairs or upgrades, and enforce rebuilding standards that make these properties safer and more resilient to future events.

In the context of mitigation, Substantial Damage Plans are crucial because they prevent repetitive loss and enhance community safety by promoting resilient rebuilding. By enforcing updated building codes and requiring elevation or retrofitting in flood-prone areas, these plans reduce the likelihood of future damage. They also enable communities to qualify for federal and state recovery funds and ensure that rebuilding efforts meet hazard-resistant standards. Through proactive damage assessment and mitigation-focused rebuilding, Substantial Damage Plans help communities break the cycle of damage and repair, ultimately reducing long-term recovery costs and strengthening community resilience against future disasters.

The assessment reveals that none of the planning stakeholders in Jones County, Iowa, currently have a Substantial Damage Plan in place. This includes all municipalities and school districts across the county. The absence of such plans highlights an opportunity for stakeholders to consider developing strategies to assess and address substantial damage after disaster events, which could support more efficient recovery and risk reduction efforts in the future.

2.9.2 Codes and Ordinances

Acquisition of Flood-Prone Properties

Having a code or ordinance for the acquisition of flood-prone properties is a powerful tool for community mitigation efforts. Such codes allow communities to proactively purchase properties located in high-risk flood areas, removing or relocating structures that are vulnerable to frequent flooding. By acquiring and often demolishing these properties, the community reduces the number of homes and businesses at risk of flood damage, thereby lowering potential future losses and minimizing the need for costly emergency response and recovery efforts. These ordinances often allow communities to convert the acquired land into open space, wetlands, or parks, which act as natural buffers that absorb floodwaters, reduce runoff, and improve water quality.

From a mitigation perspective, these codes help break the cycle of repetitive loss, where properties in flood-prone areas are continuously repaired or rebuilt only to be damaged again by future floods. Additionally, having a clear ordinance facilitates eligibility for state and federal funding, such as FEMA's Hazard Mitigation Assistance programs, which provide financial support for flood-prone property acquisitions. By setting up a structured, legal pathway for acquiring and managing flood-prone lands, communities can enhance resilience, protect residents, and create green spaces that further support flood mitigation and environmental sustainability.

The assessment shows that all planning stakeholders in Jones County, Iowa, currently lack a plan or ordinance to address the acquisition of flood-prone properties. This presents an opportunity for stakeholders to consider developing strategies or ordinances that support flood mitigation efforts by managing or acquiring vulnerable areas, potentially reducing future flood risks across the county.

Residential Building Code

A residential building code is essential for community mitigation because it sets minimum standards for construction that ensure homes are built to withstand local

hazards, such as high winds, earthquakes, floods, or wildfires. By enforcing building codes, communities reduce the vulnerability of residential structures to damage from disasters, which helps protect lives, reduces property losses, and lowers recovery costs after an event. Building codes typically include requirements for structural strength, fire resistance, moisture protection, and energy efficiency, all of which contribute to safer, more resilient homes.

For instance, in flood-prone areas, building codes may require homes to be elevated above flood levels, while in regions susceptible to high winds, they may mandate reinforced roofing and secure window installations. These standards ensure that residential buildings are better equipped to handle extreme conditions, preventing damage that could otherwise lead to costly repairs or reconstruction. Residential building codes also allow communities to qualify for better insurance ratings, which can lead to reduced insurance premiums for homeowners. Ultimately, by implementing and enforcing residential building codes, communities can build a safer housing stock that contributes to long-term resilience and sustainability.

In Olin, the Planning and Zoning Board of Adjustments actively oversees and approves construction applications, ensuring the ordinance is adequately administered and enforced. Meanwhile, other jurisdictions and school districts do not currently have adopted residential building codes, suggesting an opportunity for broader adoption of building standards that could enhance hazard resilience across the county.

The following is a summary of adopted building codes for the planning area as provided by the National Building Code Adoption Tracking Portal:

Jurisdiction	Adopted Building Code
Jones County	None
City of Anamosa	N/A
City of Cascade	None
City of Martelle	N/A
City of Monticello	None
City of Morley	N/A
City of Olin	None
City of Onslow	N/A
City of Oxford Junction	N/A
City of Wyoming	N/A
Anamosa CSD	None
Midland CSD	None
Monticello CSD	None
Olin CSD	None

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Jurisdiction	Adopted Building Code
Sacred Heart School	None
St. Patrick School	None

Commercial Building Code

A commercial building code is a critical tool for community mitigation because it establishes minimum safety and resilience standards for non-residential structures, such as offices, retail spaces, warehouses, and industrial facilities. These codes ensure that commercial buildings are designed and constructed to endure local hazards, including earthquakes, hurricanes, floods, and fires. By mandating specific structural, electrical, plumbing, and fire safety requirements, commercial building codes help protect occupants, reduce property damage, and maintain business continuity during and after a disaster.

In high-wind areas, for example, commercial building codes may require reinforced walls and roofs to prevent collapse, while in earthquake-prone regions, they may necessitate structural features to withstand seismic activity. For flood-prone areas, codes often require the elevation of buildings or the use of flood-resistant materials. Adhering to these codes means that businesses and essential facilities, such as hospitals and schools, are better equipped to remain functional or recover quickly following an emergency, reducing economic disruption in the community. Commercial building codes also lower insurance risks, which can lead to more affordable premiums for businesses. Overall, commercial building codes are integral to a community’s resilience, as they safeguard economic stability, protect lives, and support faster recovery, ultimately contributing to a stronger and more disaster-resilient community.

No jurisdictions or school districts in the county have adopted commercial building codes, highlighting an opportunity for additional stakeholders to consider implementing building standards that could contribute to increased resilience and safety in commercial structures across the region.

Use of Flood Insurance Maps

Flood insurance maps, often created and maintained by agencies like FEMA, are essential to a community’s mitigation strategy because they provide accurate, up-to-date information about flood risks across different areas. These maps identify high-risk flood zones, moderate-to-low risk areas, and special flood hazard areas, helping communities understand where flooding is most likely to occur. By using flood insurance maps, local

planners, developers, and homeowners can make informed decisions that reduce the vulnerability of structures and infrastructure to flood damage.

For communities, flood maps play a key role in guiding land-use planning and zoning. They help ensure that high-risk areas are preserved for open space, parks, or natural flood buffers, while critical facilities, such as hospitals, schools, and emergency response centers, are kept outside of flood-prone zones whenever possible. Additionally, building codes and elevation requirements are often based on flood map data, ensuring that new construction and major renovations in flood zones are designed to minimize flood risks.

Flood insurance maps also inform flood insurance requirements, ensuring that property owners in high-risk areas carry appropriate coverage to help manage recovery costs after a flood. By leveraging flood insurance maps in planning and development, communities can reduce potential flood damage, lower long-term recovery costs, and create a more resilient and prepared environment for residents and businesses alike.

The assessment indicates that only the City of Monticello in Jones County, Iowa, has a documented process for using flood insurance rate maps. This process is considered effective for reducing hazard impacts and is adequately administered and enforced. No other jurisdictions or school districts in the county currently have similar documented processes in place, suggesting an opportunity for broader adoption of flood insurance rate map utilization to enhance flood resilience and inform development decisions across the region.

Floodplain Ordinance

A floodplain ordinance is a vital tool for community mitigation as it establishes regulations for development within flood-prone areas, helping to reduce the risk of flood damage and protect public safety. These ordinances typically restrict or regulate construction, renovation, and land-use practices in designated floodplains, requiring measures such as elevated building foundations, flood-resistant materials, and setbacks from waterways. By enforcing these standards, communities can prevent or minimize the impact of flooding on homes, businesses, and critical infrastructure, reducing potential property losses and protecting lives.

One critical component of effective floodplain management is the implementation of Substantial Improvement/Substantial Damage (SI/SD) provisions, which require properties that undergo major renovations or sustain significant flood-related damage to be brought into compliance with current floodplain regulations. Under these provisions, if the cost of improvements or repairs equals or exceeds 50% of the structure's market

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value, the property must be elevated or otherwise retrofitted to meet flood protection standards. This requirement ensures that structures in high-risk areas are made more resilient over time, reducing future flood damage and financial losses for property owners and communities.

Floodplain ordinances also support sustainable land-use practices by discouraging dense development in high-risk areas and promoting the preservation of natural flood buffers, like wetlands and open spaces, which absorb excess water and help manage flood levels. Additionally, having a floodplain ordinance enables communities to participate in the National Flood Insurance Program (NFIP), making flood insurance more accessible and affordable for residents and providing access to federal disaster assistance. By incorporating SI/SD provisions, communities can further enhance flood resilience by ensuring that older or damaged structures are not repeatedly impacted by flooding without mitigation improvements.

In Jones County, several communities participate in the NFIP, each with the latest effective map date of November 19, 2021. These participating communities include Anamosa, Wyoming, Oxford Junction, Olin, Monticello, Morley, and the county itself. The Cities of Martelle and Onslow were not among those listed in the participating and non-participating communities.

The assessment shows that several jurisdictions in Jones County, Iowa, have floodplain ordinances in place, each with varying levels of effectiveness and administrative practices. The City of Olin, Jones County, City of Monticello, City of Anamosa, City of Oxford Junction, City of Martelle, and City of Wyoming all report having floodplain ordinances. These ordinances are generally viewed as effective in reducing hazard impacts, with most jurisdictions confirming that they are adequately administered and enforced.

The substantial improvement/substantial damage provisions are recognized as an essential component of these ordinances. In Jones County, enforcement of SI/SD regulations ensures that properties undergoing major repairs or renovations meet modern floodplain management requirements, reducing repetitive loss claims and improving overall flood resilience. In the City of Wyoming, the ordinance is consulted prior to any new property development, ensuring compliance with floodplain regulations, including SI/SD provisions. The City of Martelle follows county guidelines for its floodplain management, which includes SI/SD compliance when applicable.

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Hazard-Specific Ordinance(s)

Hazard-specific ordinances are targeted regulations that address specific local hazards, such as earthquakes, wildfires, hurricanes, or landslides, and they play an essential role in a community's mitigation strategy. These ordinances set guidelines for building design, land use, and safety practices tailored to the unique risks posed by each hazard, ensuring that development is better suited to withstand local threats. For example, a wildfire ordinance might require defensible space around homes and use of fire-resistant materials, while an earthquake ordinance could mandate structural reinforcements to improve building stability during seismic events.

By implementing hazard-specific ordinances, communities can reduce vulnerability, safeguard lives, and limit property damage. These ordinances enable local governments to regulate building codes, zoning, and infrastructure development in high-risk areas, helping prevent construction practices that might increase disaster impacts. Hazard-specific ordinances also encourage responsible growth by guiding development away from hazard-prone locations, preserving natural buffers, and requiring mitigation measures for new and existing structures. Additionally, these ordinances can improve community eligibility for federal and state funding for disaster preparedness and resilience projects. Overall, hazard-specific ordinances are a proactive approach to building resilience, protecting public safety, and minimizing long-term recovery costs by addressing hazards before disasters strike.

The assessment indicates that none of the planning stakeholders in Jones County, Iowa, currently have a natural hazard-specific ordinance in place. This includes all municipalities and school districts across the county. The absence of such ordinances presents an opportunity for stakeholders to explore the development of targeted regulations that address specific natural hazards, potentially strengthening local resilience to these risks and supporting safer community growth.

Subdivision Ordinance

A subdivision ordinance is a regulation that governs how land can be divided into lots for development, establishing standards for infrastructure, roadways, drainage, utilities, and public spaces within new developments. This ordinance is crucial for community mitigation because it ensures that subdivisions are planned and built with hazard resilience in mind, reducing the risk of future property damage and enhancing public safety. Subdivision ordinances typically include requirements for grading and drainage to manage stormwater, restrictions on building in flood-prone or erosion-sensitive areas,

and specifications for road width and access that facilitate emergency response and evacuation.

By enforcing a subdivision ordinance, communities can guide growth responsibly, preventing new developments from increasing hazard exposure. For instance, the ordinance may require developers to include flood mitigation measures, such as retention basins, or to set aside open spaces in areas vulnerable to natural hazards, which can act as buffers. Subdivision ordinances also promote consistent infrastructure standards, ensuring that new developments have resilient roads, utilities, and drainage systems that reduce vulnerability to disasters.

The assessment shows that a few jurisdictions in Jones County, Iowa, have subdivision ordinances in place, each with different approaches to hazard mitigation. Jones County and the City of Anamosa have subdivision ordinances that are reported to be effective, with Jones County's ordinance specifically addressing stormwater and flooding. The City of Monticello also has a subdivision ordinance, which is effectively administered and enforced. Other municipalities and school districts in the county do not have subdivision ordinances, suggesting an opportunity for broader adoption of regulations that could enhance hazard resilience, particularly in areas prone to flooding and stormwater issues.

Zoning Ordinance

A zoning ordinance is a regulation that divides a community into zones or districts, specifying the types of land uses permitted in each area, such as residential, commercial, industrial, and recreational. This ordinance is fundamental for community mitigation because it guides development in a way that minimizes exposure to hazards and promotes safer, more resilient growth. Zoning ordinances can restrict high-density or critical infrastructure development in hazard-prone areas—such as floodplains, steep slopes, or wildfire-prone zones—and instead encourage these activities in safer locations. By directing land use, zoning ordinances help prevent placing homes, businesses, and essential services in areas that are vulnerable to natural hazards.

For mitigation purposes, zoning ordinances may include overlay zones with additional regulations for specific hazards, such as requiring elevated construction in flood-prone areas or limiting vegetation near structures in wildfire-prone zones. These targeted regulations improve public safety and reduce the potential for property damage. Additionally, zoning ordinances can require open space in hazard areas, preserving natural buffers that help manage floodwaters or reduce wildfire spread.

Zoning ordinances support sustainable growth and resilience by aligning development with hazard mitigation goals. They help communities proactively address risks, protect residents and infrastructure, and create safer, more adaptable environments. Overall, zoning ordinances play a critical role in hazard mitigation by shaping land use in ways that reduce vulnerability, enhance preparedness, and support long-term community resilience.

The assessment shows that several jurisdictions in Jones County, Iowa, have zoning ordinances in place to manage land use and potentially reduce hazard impacts. The City of Olin, Jones County, City of Monticello, City of Anamosa, City of Martelle, and City of Wyoming all reported having zoning ordinances. These ordinances are generally considered effective, with each jurisdiction noting that they are administered and enforced through local governing bodies. For instance, City of Martelle enforces its zoning ordinance through the Mayor and Council, while City of Wyoming utilizes a land use board for oversight. Jones County's ordinance is noted to be "somewhat" effective, indicating room for improvement. Other municipalities and school districts do not have zoning ordinances, suggesting an opportunity to expand land use regulations that can support safer development and hazard mitigation across the county.

2.9.3 Expansion and Improvement of Plans, Codes, and Ordinances

The assessment reveals that several jurisdictions and school districts in Jones County, Iowa, see opportunities for improvement in their local plans, codes, and ordinances to better manage risks. The City of Olin suggests developing additional plans to strengthen local preparedness, while Jones County highlights the need for increased time and funding to enhance public awareness and education across all planning areas. The City of Monticello noted that their current capabilities do not address building codes or natural hazards. Sacred Heart Grade School and City of Anamosa identified potential improvements in their emergency operations and flood/drainage management plans, respectively, with Anamosa emphasizing a need for more personnel to effectively administer these efforts.

City of Morley recommends creating a comprehensive flood and drainage management plan integrated with capital improvements. Olin Community School District and Midland Community School District expressed a readiness to assess future needs, while St. Patrick School and City of Oxford Junction remain uncertain about specific expansions at this time. The City of Wyoming proposed limiting construction in flood-prone areas as a risk reduction measure. Additionally, City of Martelle pointed out specific zoning ordinance sections (#1, #5, and #8) to be addressed as a starting point. These reflections indicate a

shared interest across the county in enhancing regulatory frameworks and strategic planning to improve resilience against various hazards.

2.9.4 Key Staff

The assessment of key positions across Jones County, Iowa, reveals that there are significant gaps in staffing roles essential for effective local mitigation and hazard resilience activities. While some jurisdictions have specific positions in place, such as Chief Building Officials, Civil Engineers, Emergency Managers, Floodplain Administrators, and GIS Coordinators, the distribution is inconsistent, and several areas are left without these critical roles.

Chief Building Officials are vital for enforcing building codes and regulations that reduce structural vulnerability to hazards. Only a few jurisdictions, including Jones County, St. Patrick School, Midland Community School District, and City of Oxford Junction, have this position filled. Many other jurisdictions lack this role, limiting their capacity to ensure safe and resilient construction practices.

Civil Engineers are crucial for planning and maintaining resilient infrastructure that can withstand hazards like floods and extreme weather. Currently, only Jones County and City of Monticello have Civil Engineers on staff, and while their coordination and enforcement capabilities are generally adequate, other areas without this expertise may struggle to implement resilient infrastructure designs effectively.

Community Planners, essential for coordinating land use planning, hazard mitigation, and sustainable growth, are absent across all jurisdictions in Jones County. This absence could hinder proactive development strategies and restrict coordinated planning efforts, potentially leading to higher vulnerability in land use practices.

Emergency Managers are responsible for disaster preparedness and response, including interagency coordination and community readiness. While Jones County, City of Anamosa, Midland Community School District, and City of Wyoming have Emergency Managers, the role is notably absent in other areas, indicating a need for enhanced emergency management staffing and training to boost preparedness and resilience across the county.

Floodplain Administrators play a critical role in managing flood-prone areas, enforcing regulations, and mitigating flood risks. City of Olin, Jones County, City of Anamosa, City of Monticello, City of Morley, City of Oxford Junction, and City of Wyoming have Floodplain Administrators, either locally or through the County, though some report a

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need for additional training to fully support flood management efforts. The lack of this role in other areas could lead to inconsistent enforcement of floodplain regulations and increased flood vulnerability.

Finally, GIS Coordinators are essential for mapping, hazard assessment, and spatial planning, which inform all other mitigation and response efforts. Jones County is the only jurisdiction with a dedicated GIS Coordinator, indicating a county-wide gap in GIS capabilities that limits the potential for accurate hazard mapping, resource allocation, and effective response planning.

The presence of these positions is crucial for building resilient communities in Jones County. While some jurisdictions have taken steps to fill these roles, a more consistent staffing strategy across the county could enhance enforcement, proactive planning, and coordinated hazard mitigation efforts. Filling these roles or implementing shared resources for smaller jurisdictions could strengthen hazard resilience, reduce vulnerabilities, and support safer development across Jones County.

2.9.5 Commissions

The assessment indicates that several jurisdictions in Jones County, Iowa, have a Planning Commission or similar body to oversee planning and zoning activities, though the structures and staffing vary. Jones County has a Planning Commission in place, with adequate staffing and coordination for enforcement, though they noted the need for more comprehensive staffing support. City of Onslow also has a well-coordinated Planning Commission with effective enforcement and interagency collaboration. City of Anamosa relies on a Volunteer Planning and Zoning Commission, suggesting community involvement but potentially limited capacity for enforcement.

Some educational institutions, like St. Patrick School, have their own Strategic Planning Committees, specifically focused on school-related planning needs. City of Wyoming manages planning functions through its Community Development and Land Use Board, which oversees local development and zoning enforcement. Other jurisdictions and school districts, including City of Olin, City of Monticello, City of Morley, City of Oxford Junction, City of Martelle, and various school districts, do not have a dedicated Planning Commission or similar body, presenting an opportunity to establish or strengthen planning functions to enhance zoning and hazard mitigation efforts across the county.

2.9.6 Data

The assessment highlights a varied level of access to hazard data and GIS analysis across jurisdictions, affecting local capabilities for risk assessment and mitigation planning. Although City of Monticello and City of Wyoming have hazard data readily available and have used it for risk mitigation in the past, other jurisdictions, including City of Olin, Jones County, City of Onslow, City of Anamosa, City of Morley, City of Oxford Junction, and City of Martelle, lack direct access to such data. Notably, hazard data is available within the county's mitigation plan, but ensuring this data is more readily accessible and actively utilized by each jurisdiction could strengthen local decision-making, vulnerability identification, and prioritization of mitigation actions. St. Patrick School, for instance, suspects they have some hazard data but requires it to be located and updated for effective use.

For GIS analysis, only Jones County, City of Anamosa, and City of Oxford Junction currently use GIS data for spatial planning, hazard mapping, and risk assessment. GIS analysis is essential for understanding hazard exposure, resource allocation, and community planning, yet most jurisdictions, including City of Olin, City of Onslow, City of Monticello, City of Morley, City of Martelle, and City of Wyoming, as well as the school districts, do not leverage this tool in their planning processes.

Expanding both hazard data access and GIS capabilities across all jurisdictions could greatly improve Jones County's mitigation efforts. Leveraging the hazard data already compiled in the mitigation plan, along with GIS tools, would enable communities to adopt a more proactive approach to risk management. This expansion would support evidence-based decision-making, effective resource prioritization, and a stronger stance when applying for state and federal funding for resilience and mitigation projects. Ultimately, increased access to these resources would enhance overall community resilience and bolster preparedness across the county.

2.9.7 Agreements

The assessment reveals that mutual aid agreements are in place for several jurisdictions, including the City of Martelle, within Jones County, Iowa, enhancing their ability to access additional resources and support during emergencies. City of Olin utilizes mutual aid agreements, particularly with Olin Fire and Jones County Emergency Management Agency (EMA), to bolster their mitigation capabilities. Jones County also benefits from mutual aid agreements to address and mitigate risks effectively. City of Monticello has established mutual aid agreements, which they have successfully used in past risk mitigation efforts. City of Oxford Junction participates in mutual aid arrangements, specifically citing a county-wide 28e agreement with fire townships, which strengthens county-wide emergency response capabilities.

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Other jurisdictions, including City of Onslow and City of Wyoming, do not currently utilize mutual aid agreements, potentially limiting their access to external support in large-scale incidents. School districts and cities such as City of Anamosa and City of Morley either did not specify or do not engage in mutual aid agreements for emergency management or mitigation.

Mutual aid agreements are a valuable tool in emergency management, providing critical support and resource-sharing capabilities among neighboring jurisdictions and agencies. Expanding these agreements to include more areas in Jones County could enhance community resilience, improve response times, and ensure that localities are better equipped to manage and mitigate risks collaboratively.

2.9.8 Expansion and Improvement of Staff, Commissions, Data, and Agreements

The assessment highlights varied perspectives across jurisdictions in Jones County, Iowa, on how to improve local capabilities related to staffing, commissions, data, and mutual aid agreements to reduce risk. City of Olin sees potential in further development to enhance risk reduction. Jones County emphasizes the need for additional time, employees, and funding to expand its capabilities effectively, while City of Onslow is uncertain about specific improvements. City of Monticello has identified its current resources as sufficient but likely to benefit from reinforcement in data utilization and staffing.

Sacred Heart Grade School suggests integrating these capabilities within their Emergency Operations Plan (EOP), and City of Morley acknowledges the potential of establishing more mutual aid agreements to achieve common goals. St. Patrick School recognizes the importance of using grant-writing abilities to secure funds and indicates that their Strategic Planning Committee could address structural improvements.

City of Oxford Junction proposes turning to the county's Emergency Management Agency (EMA) for added support, while City of Martelle highlights the possibility of equipment rental or leasing agreements with other agencies to bolster resources. City of Wyoming remains uncertain about specific improvement avenues.

Overall, the findings reflect a collective awareness of areas needing growth, whether through additional staffing, increased funding, formalized commissions or committees, better access to data, or stronger mutual aid agreements. Enhancing these aspects across Jones County could improve the region's risk mitigation and response capabilities, supporting a more resilient community.

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2.9.9 Funding

The assessment of funding resources and grant-writing capabilities across Jones County, Iowa, reveals significant variability in local jurisdictions' ability to support hazard mitigation and resilience-building initiatives. Only some jurisdictions, like City of Monticello, Sacred Heart Grade School, and Midland Community School District, have established grant-writing capabilities, allowing them to secure resources for mitigation efforts, such as risk assessments and safety improvements. Expanding grant-writing skills across all jurisdictions could enable more communities to apply for and receive funding for essential resilience projects, thus enhancing overall preparedness and community safety.

Capital improvements funding, available in Jones County, City of Onslow, and several schools, is frequently directed toward infrastructure maintenance and unexpected purchases, though the potential for its use in future mitigation projects exists. Similarly, Community Development Block Grant (CDBG) funds have been utilized by various jurisdictions, including City of Oxford Junction and City of Wyoming, for projects like water and sewer improvements and housing repairs, with applications toward mitigation activities showing promise. Broader utilization of CDBG funds could further support hazard resilience across the county.

Federal funding sources, excluding FEMA, have been accessed by some jurisdictions, including Jones County and City of Martelle, for activities like emergency management support, water infrastructure, and school safety enhancements. Expanding awareness of federal resources and strategically applying them to mitigation could further support preparedness across the county. Utility service fees, available to some communities, offer limited support for operational expenses but may not be robust enough to fund large-scale mitigation initiatives. Similarly, impact fees, used exclusively by Jones County to offset wages, represent a largely untapped resource for mitigation funding in other jurisdictions.

State funding programs, accessed by various cities and schools, have supported safety, conservation, and infrastructure improvements in the past. However, some jurisdictions are uncertain about these programs or lack access, indicating an opportunity to raise awareness and streamline access to state resources for hazard mitigation. Lastly, stormwater utility fees, available in City of Monticello and City of Olin, provide funding for flood mitigation projects, though expansion of this resource countywide could support broader stormwater management needs.

Section 2: Whole Community Profile

Overall, enhancing funding access, grant-writing capabilities, and strategic resource utilization across Jones County can strengthen the collective capacity to implement effective hazard mitigation and build community resilience against future risks.

2.9.10 Expansion and Improvement of Funding

The assessment of funding capabilities across Jones County, Iowa, shows that jurisdictions have varying strategies and needs for improving risk mitigation through additional financial resources. City of Olin is focused on analyzing a stormwater project to mitigate flash flooding in the Henderson area, highlighting a proactive approach to addressing stormwater risks. Jones County noted that an increase in funding would support general risk reduction efforts, though it did not specify particular projects. City of Monticello reported that while it utilizes existing resources effectively, no additional funding is currently available to expand its capabilities. Sacred Heart Grade School and St. Patrick School indicated a willingness to seek out available funds to support school safety and infrastructure improvements, though they lack specific plans.

Several other jurisdictions, including City of Anamosa, City of Morley, and City of Oxford Junction, did not identify specific funding strategies for future mitigation, pointing to an area for potential development in targeted financial planning for hazard mitigation. City of Martelle expressed a significant concern regarding stormwater management and is actively considering implementing a new stormwater fee to finance necessary drainage repairs and maintenance, illustrating a community-driven approach to enhancing resilience.

These findings suggest that while some jurisdictions have specific mitigation funding plans, others may benefit from enhanced financial resources or targeted funding strategies to address unique local risks. Expanding funding sources, particularly for stormwater management and school safety, could help reduce vulnerabilities and strengthen resilience across Jones County.

2.9.11 Public Outreach

The assessment of public outreach tools for mitigation across Jones County, Iowa, reveals a varied use of communication platforms to engage residents, share hazard information, and support vulnerable communities. Community newsletters are widely used by several jurisdictions, with entities like Sacred Heart Grade School and St. Patrick School distributing regular updates to school families and the wider community. Cities like Monticello, Martelle, and Wyoming have integrated newsletters with utility bills, ensuring broad access to information. Other areas, such as the Olin Community School

District, distribute newsletters within their specific school communities, indicating a mix of localized and broader outreach efforts across the county.

Hazard awareness campaigns are less common across the county, with only a few jurisdictions actively engaging in them. The Olin Community School District and Midland Community School District conduct school-centered initiatives like Fire Prevention Week, and Martelle holds a city-wide cleanup day, which contributes indirectly to community hazard awareness. The absence of formal hazard awareness campaigns in many jurisdictions suggests an opportunity for increased outreach to improve public knowledge of local risks and preparedness.

Local news coverage serves as a valuable communication channel for many areas, with jurisdictions like Jones County and Monticello having broad media coverage through county-wide newspapers. Publications like the Monticello Express and Journal Eureka support information dissemination across multiple communities, enabling timely updates and community awareness. This media presence provides a strong foundation for public outreach, though some communities rely on less extensive publications, which may limit their reach.

Social media is a widely utilized outreach tool, with platforms like Facebook enabling many jurisdictions to engage with residents effectively. Jurisdictions such as Jones County, Monticello, and Sacred Heart Grade School have significant followings, which enhances their outreach potential. Some cities, like Oxford Junction, report extensive social media reach, while others, such as Martelle, do not utilize social media, highlighting a gap in digital engagement for some communities.

Support for underserved and vulnerable communities is present in certain areas, with organizations in jurisdictions like Oxford Junction and Martelle, where churches and food pantries play essential roles. Schools like Sacred Heart and St. Patrick extend their support beyond the school community, engaging in initiatives that provide essential resources. However, jurisdictions such as Jones County report minimal targeted support for vulnerable populations, indicating areas for potential expansion of services and advocacy.

Jones County's public outreach tools for mitigation demonstrate a blend of traditional and digital communication methods. Expanding hazard awareness campaigns, strengthening social media presence in underserved areas, and increasing support for vulnerable communities could enhance the county's overall resilience and preparedness for potential hazards.

Section 2: Whole Community Profile



2.9.12 Expansion and Improvement of Public Outreach

The assessment of public outreach capabilities in Jones County, Iowa, highlights various methods and opportunities for expanding communication to reduce risk. Many jurisdictions recognize the value of increasing social media engagement as a tool for public outreach. For example, Sacred Heart Grade School plans to boost Facebook postings as the school year progresses, while St. Patrick School aims to use social media to share school improvements with the community, fostering greater risk awareness. Similarly, Midland Community School District is actively working on expanding its social media outreach, while City of Martelle is considering launching a social media account to improve resident communication.

Some areas, such as Jones County, cite the need for additional funding and time to effectively enhance outreach efforts, indicating resource limitations. Cities like Monticello and the Olin Community School District express general interest in expanding outreach but lack specific plans. This indicates that while the intent to improve communication exists, strategic plans and additional resources may be required to fully leverage these channels for risk reduction. Expanding social media presence and developing cohesive outreach strategies could strengthen public awareness and preparedness across the county.

2.10 Changes in Development

Element Addressed in Section
Element E1. Was the plan revised to reflect changes in development? (Requirement 44 CFR § 201.6(d)(3)), including requirement E1-a.

Since the previous plan update, no significant changes in development have occurred in hazard-prone areas of Jones County that have affected the jurisdiction's overall vulnerability to hazards. There have been no major construction projects, land use changes, or shifts in population trends that would increase or decrease vulnerability. Additionally, no significant updates to local policies, standards, codes, regulations, or land use plans have been implemented that would alter the county's hazard risk profile. Conditions in underserved communities and gaps in social equity remain consistent with the previous plan, with no notable changes affecting vulnerabilities.

2.11 Public Feedback

This section collects public input for this Plan, gathering data from respondents on their community, concerns about natural hazards, levels of preparedness, and mitigation

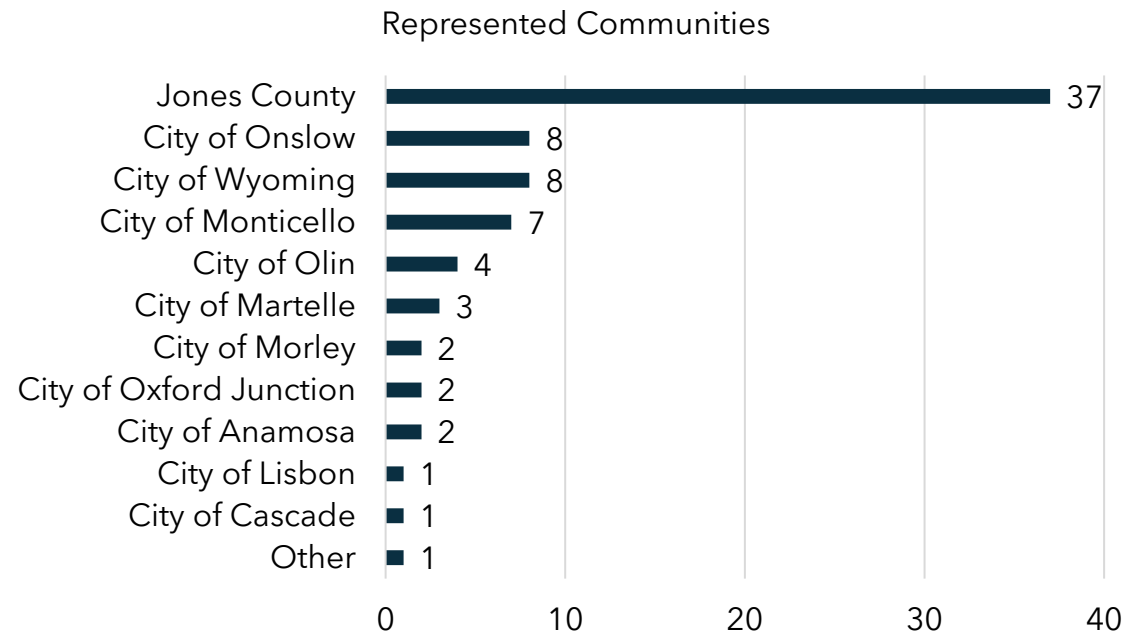
Section 2: Whole Community Profile



preferences. Public input is essential for local jurisdictions to understand community needs and concerns, enabling them to develop effective mitigation strategies. The survey, completed by 75 respondents, was distributed electronically via social media posts and websites. The feedback helps guide decisions aimed at reducing risks, improving resilience, and enhancing preparedness for natural disasters.

2.11.1 Community and School Information

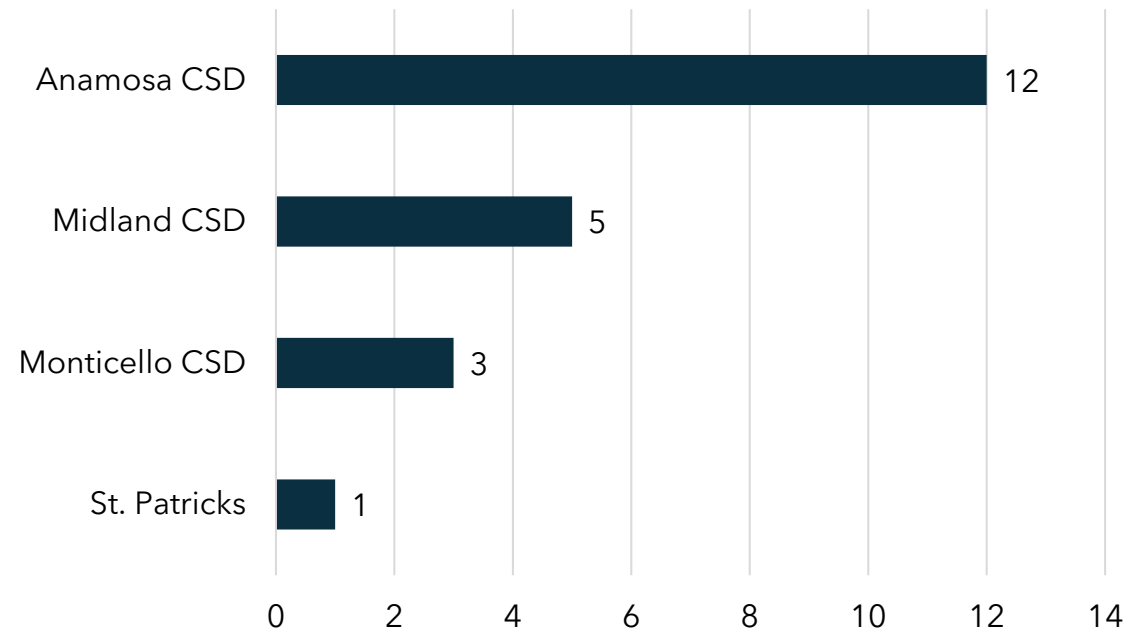
The following data represents the respondents' residential locations and their parental status concerning local school attendance. It asks which community the respondent lives in, capturing a wide range of responses from various towns, cities, and unincorporated areas within Jones County and nearby. This provides insight into the geographic distribution of survey participants. The section also inquires whether the respondent is a parent of a child currently enrolled in a local school district, helping to identify how many participants have school-aged children, which could influence their views on community preparedness and resilience. For those who are parents, the survey further asks which school district their children attend, offering an understanding of which educational institutions are represented in the responses. This information helps to identify patterns or differences in perception based on the school district, offering a clearer picture of the needs and concerns across different parts of the county.





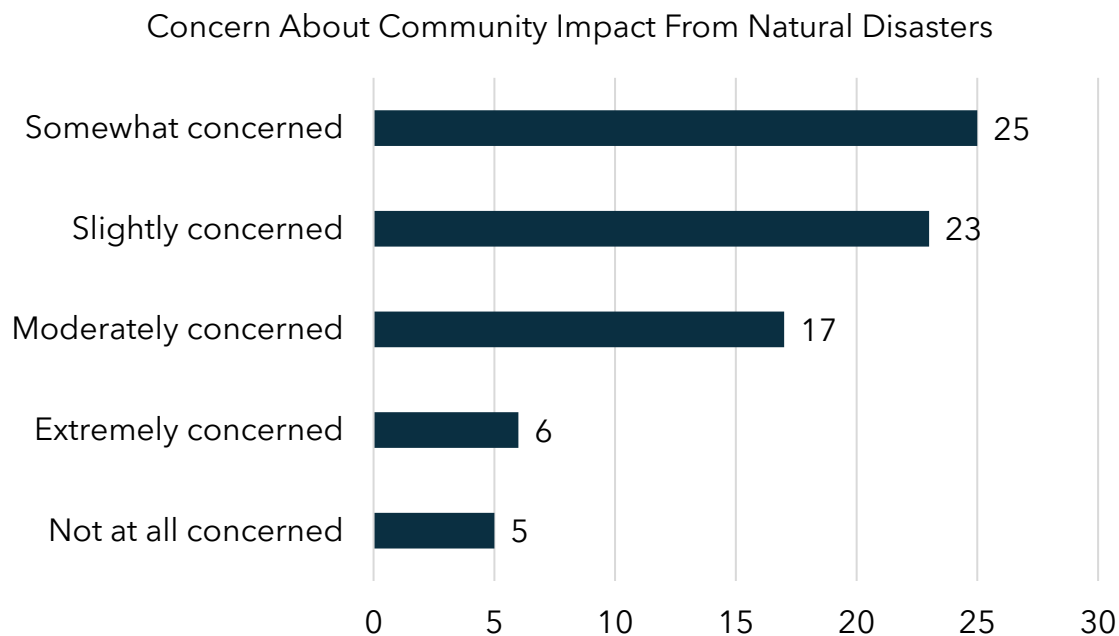
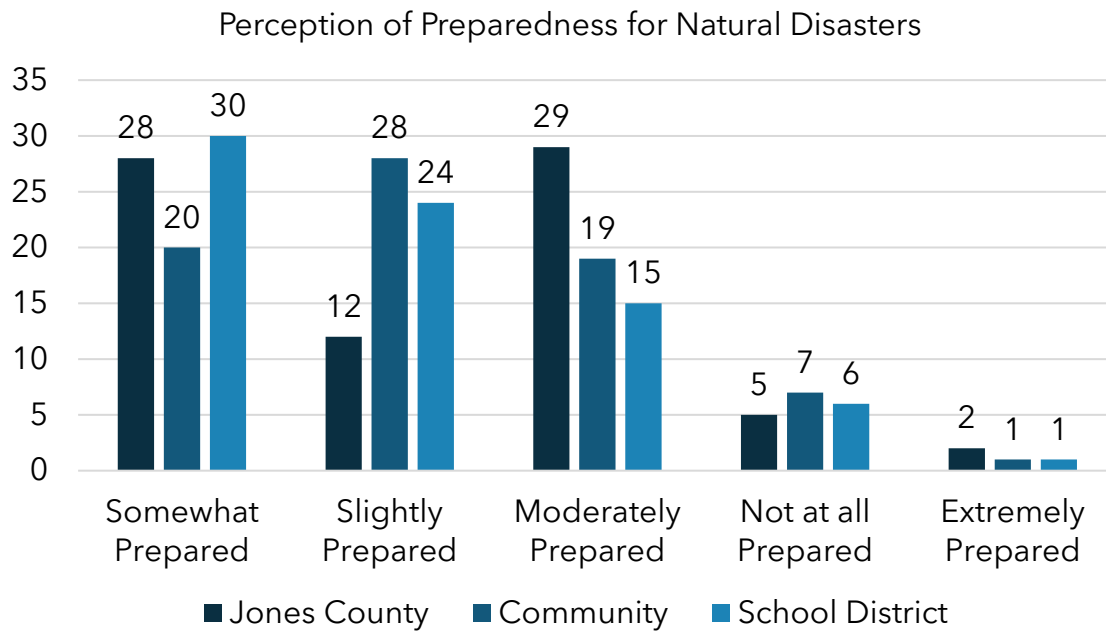
A Parent of a Child in School	
Yes	No
27.63%	72.37%

Of those who indicated they had a child in a school, these were the school or school district of origin:



2.11.2 Concerns and Preparedness for Natural Hazards

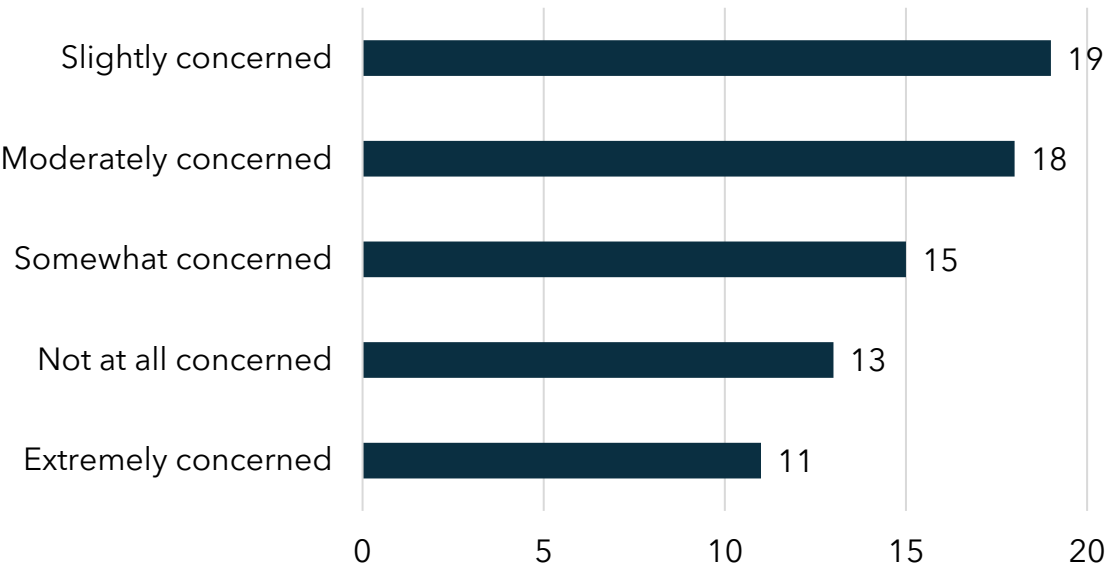
The following data gathers respondents' perspectives on how vulnerable they believe their community is to natural disasters, such as floods, droughts, or severe storms. It asks how concerned they are about the potential impacts of these hazards, as well as their views on how prepared their community, Jones County as a whole, and local school districts are for such events. This section helps identify gaps in preparedness, areas where residents feel vulnerable, and the overall community sentiment toward disaster readiness. This information is vital for shaping hazard mitigation strategies and ensuring that plans address the most pressing concerns of the population.



This data indicates that the majority of respondents are somewhat or slightly concerned about the potential impact of natural disasters on their community, while a smaller portion is either extremely concerned or not concerned at all.



Concerns About Climate Change Impacts On Community



This data shows a fairly balanced distribution of concern levels, with the largest group being slightly or moderately concerned, but a notable number of respondents expressing extreme concern or no concern at all.

2.11.3 Hazards Affecting the Community

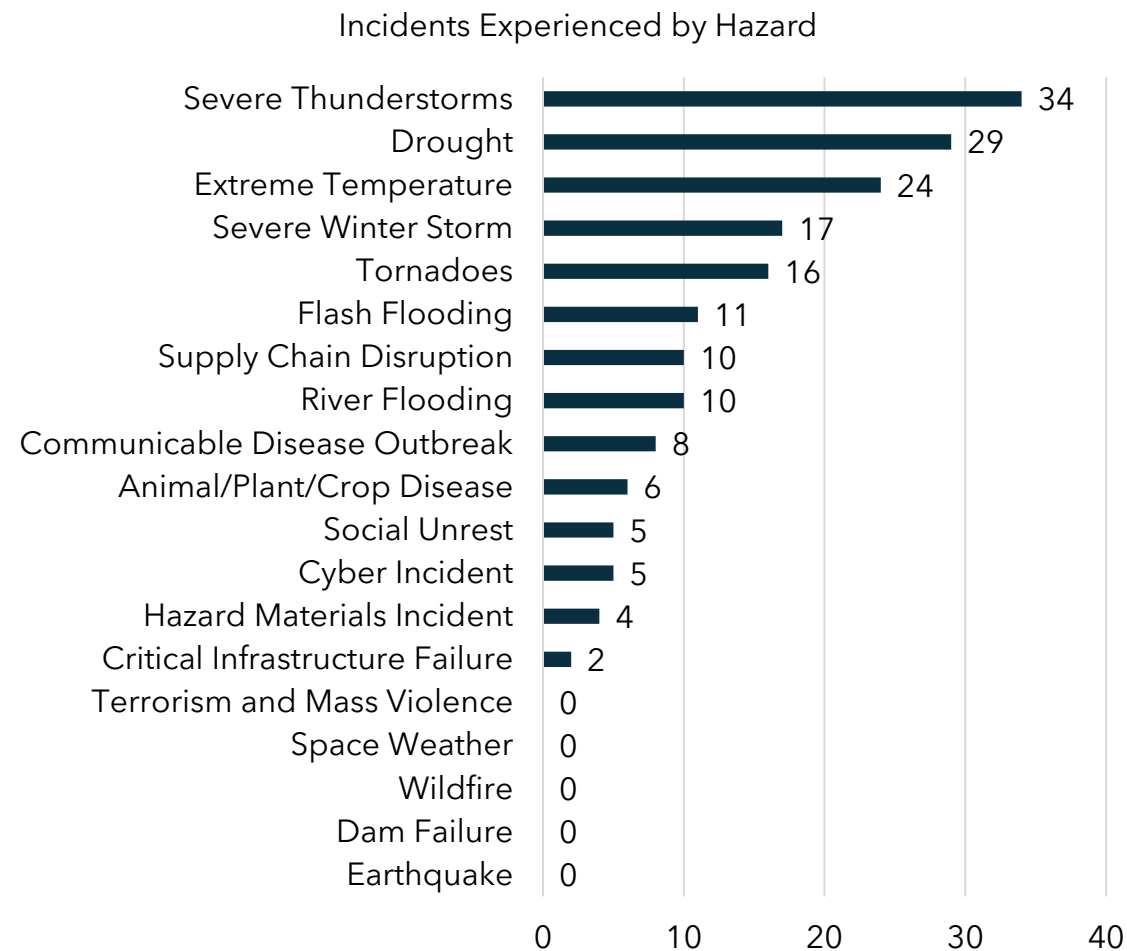
The following data collects information on which natural hazards residents believe pose the greatest threat to their community. It asks respondents to rank the top hazards they are most concerned about and to report how frequently these hazards—such as flooding, drought, or extreme temperatures—have caused harm, endangered lives, or damaged property in the past five years. This section provides a clear understanding of the community's experiences with and perceptions of various hazards, helping local authorities prioritize mitigation efforts and focus on the risks that residents feel are most significant.

The top five (5) hazards participants felt presented the greatest threat to their community were:

- Tornadoes
- Severe Thunderstorms
- Drought
- Severe Winter Storms
- Flash Flooding



The following breaks down all hazards and ranks them by the number of times the respondents experienced them:

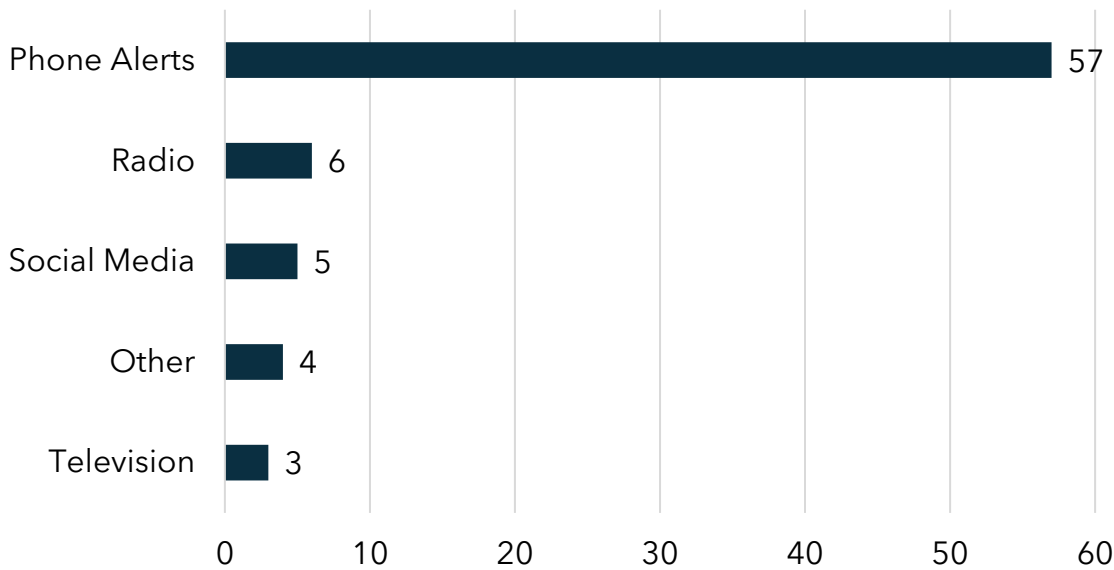


2.11.4 Emergency Notifications and Preparedness Programs

The following data collects insights on how residents receive warnings about severe weather and other hazards, as well as their preferences for emergency communication methods. It asks respondents to identify the best way to receive notifications, such as through phone alerts or social media, and assesses whether they feel they get enough notice before a hazard occurs. Additionally, this section gathers input on the types of preparedness programs residents would like to see offered, including community mitigation activities. This information helps local authorities improve communication systems and tailor preparedness programs to meet community needs.



Best Method To Receive Warnings About Severe Weather



The majority of respondents receive weather warnings from official weather sources like the National Weather Service (NWS) and NOAA, with 13 people citing these as their primary source. Others rely on county alerts (9 respondents) and a combination of government agencies, county sources, weather services, and local news (8 respondents). Several respondents (5) also mentioned receiving warnings from both weather sources and local news, while 5 others cited county alerts or local news independently. Some respondents also mentioned receiving notifications from relatives, friends, neighbors, or work/school in combination with official weather services. This shows a preference for official channels, with supplementary information coming from local and personal sources.

Enough Notice	
Yes	No
83.46%	16.44%

Several respondents who indicated they do not feel they receive enough notice of expected hazards pointed to issues with city sirens, noting that sirens either do not exist or are not functioning properly in their area. Others mentioned problems with phone service, citing unreliable reception as a reason for missing alerts. Specific events like the Derecho were highlighted, with some stating they received insufficient or no warning before the event. Additionally, some respondents expressed a general distrust in the warnings they receive, except from certain reliable sources. A few respondents



emphasized the need for more timely alerts, particularly for weather-related events. These concerns suggest a need for more reliable and trusted local warning systems.

2.11.5 Mitigation Participation and Thoughts

The following data collects respondents' willingness to participate in residential mitigation activities, such as flood-proofing homes or creating defensible spaces to reduce wildfire risk. It asks whether residents feel their home or community is resilient to natural hazards and seeks feedback on potential programs or initiatives that could enhance resilience. Additionally, the section invites respondents to share any thoughts or ideas about risk reduction, resiliency, or vulnerability to natural disasters. This input helps local authorities gauge public interest in mitigation efforts and gather ideas for improving community safety.

Interested in Participating in Residential Mitigation Activities		
I Don't Know	Yes	No
30	24	20

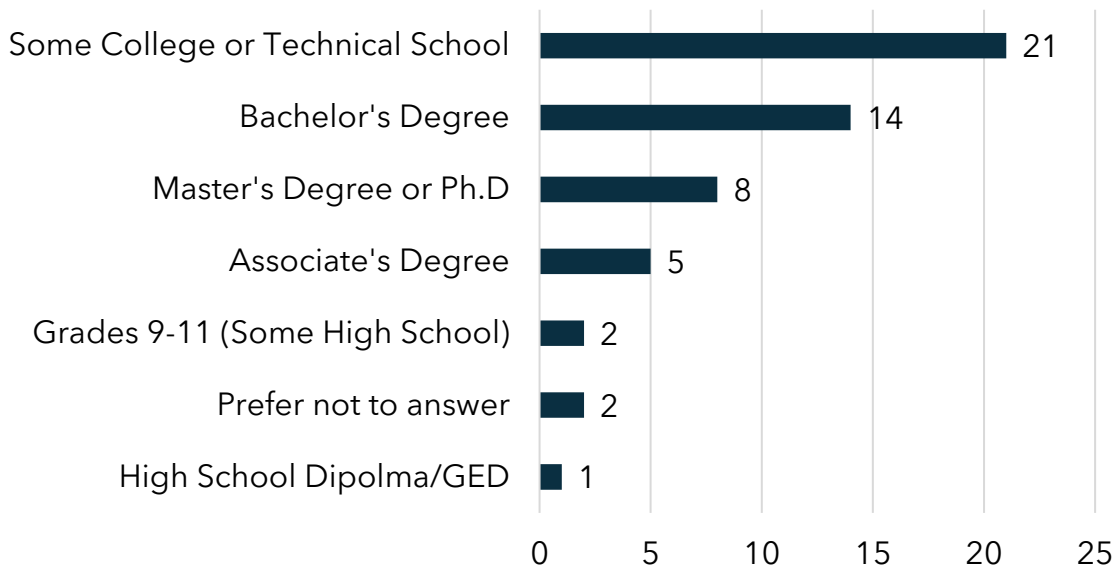
The results show that there is a mix of interest in participating in residential mitigation activities. While 24 respondents indicated they are interested in measures like flood-proofing or creating defensible spaces, the largest group (30 respondents) is uncertain about their participation. Meanwhile, 20 respondents stated they are not interested in these activities. This suggests there may be a need for more information or outreach to help residents understand the benefits of mitigation efforts.

2.11.6 Demographic Information

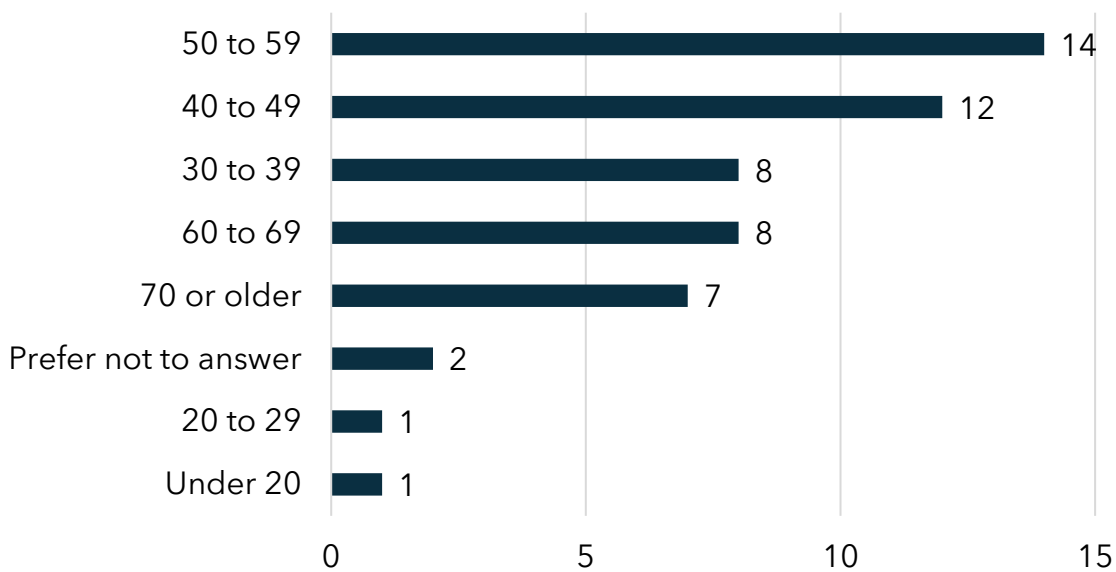
The following data collects details about the respondents' backgrounds, such as their age, gender, race, education level, household income, and housing situation. It also asks whether the respondent is answering on behalf of a household or an organization. This demographic information helps local authorities understand the characteristics of the population they are serving, ensuring that hazard mitigation strategies are inclusive and address the needs of diverse community members.



Respondent's Highest Level of Education

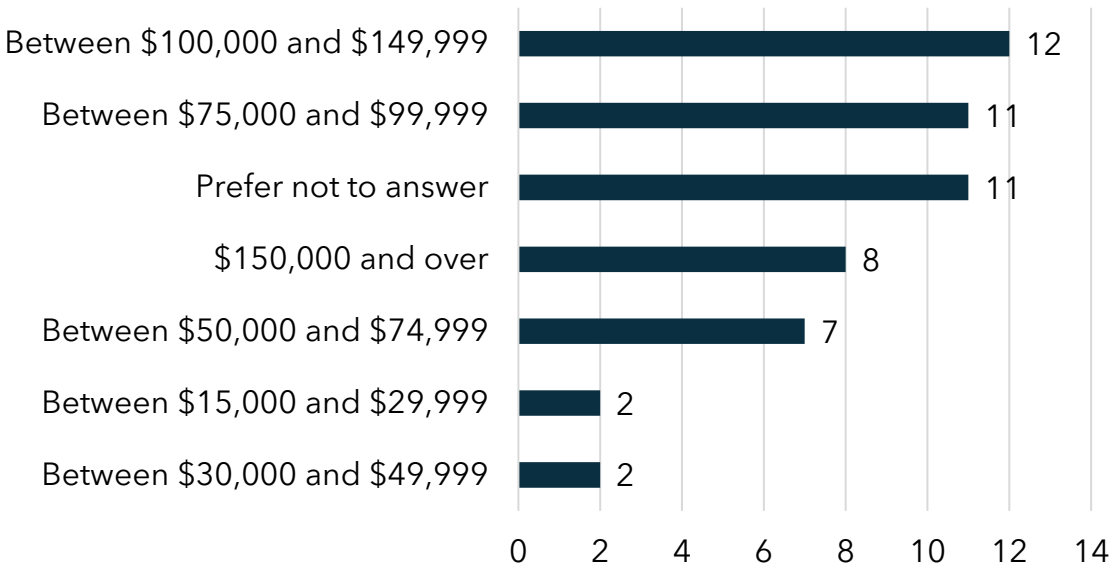


Respondent's Age



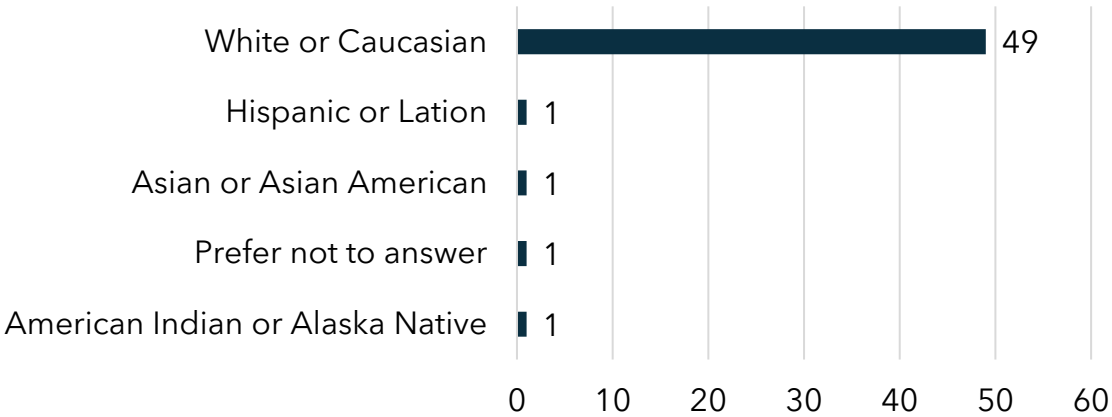


Respondent's Household Income Level



Respondent's Gender		
Prefer not to answer	Male	Female
2	19	31

Respondent's Race



Respondent's Housing Situation		
Homeowner	Renter	Living with Someone Else
47	5	1



SECTION 3: RISK ASSESSMENT



SECTION 3: RISK ASSESSMENT

3.1 Overview

This section identifies and profiles relevant hazards, and assesses the exposure of lives, property, and infrastructure to these hazards. The process allows for a better understanding of a jurisdiction's potential risk to hazards and provides a framework for developing and prioritizing mitigation actions to reduce risk from future hazardous incidents. The following terms are used throughout the Plan:

- **Hazard:** Event, incident, or physical condition that has the potential to cause fatalities, injuries, property damage, (critical) infrastructure damage, agricultural loss, damage to the environment, interruption of business, and other types of harm or loss.
- **Vulnerability:** Degree of susceptibility to physical injury, harm, damage, or economic loss; depends on an asset's construction, contents, and economic value of its functions.
- **Risk:** Product of a hazard's likelihood of occurrence and its consequences to society; the estimated impact that a hazard would have on people, services, critical infrastructure, and structures in a community. Risk can thus be seen as where hazards intersect with vulnerabilities.

This Plan covers the breadth of threats and hazards facing the planning area as a whole but does not categorize its analysis or hazard profiles among "natural," "technological," or "manmade" hazards—instead, the focus is to provide a comprehensive review of hazards and their impacts to the planning area. Additionally, the frequency, magnitude, and behavior of natural hazards can be affected by human actions and choices, such as land use and forest management practices. Though this section covers all hazards the mitigation actions only cover natural hazards as identified in FEMA guidance.

3.1.1 Methodology

After the hazards of concern were identified for the planning area in coordination with the Jones County Emergency Management Agency, the hazards were ranked to describe their probability of occurrence and impact on the population, property (general building stock including critical facilities), and the economy. Each covered jurisdiction was invited to rank the hazards. These responses were blended to identify an overall risk profile for the planning area. This is due to no significant changes to the geography or climate for the planning area.

The probability of occurrence is an estimate of how often a hazard incident occurs. A review of historic incident assists with this determination. Each hazard of concern is rated in accordance with the numerical ratings and definitions below:

Rating	Probability Category	Definition
1	Rare	Hazard incident is not likely to occur within 100 years (>1% chance of occurrence in any given year)
2	Occasional	Hazard incident is likely to occur within 100 years (1% change of occurrence in any given year)
3	Frequent	Hazard incident is likely to occur within 25 years (4% chance of occurrence in any given year)

The impact of each hazard is considered in three categories: impact on the population, impact on the property (general building stock including critical facilities), and impact on the economy. Based on documented historical losses and a subjective assessment by the planning stakeholders, an impact rating of high, medium, or low is assigned with a corresponding numeric value for each hazard of concern. In addition, a weighting factor is assigned to each impact category: three (3) for population, two (2) for property, and one (1) for economy. This gives the impact on the population the greatest weight in evaluating the impact of a hazard.

Category	Weighting Factor	Low Impact (1)	Medium Impact (2)	High Impact (3)
Population	3	14% or less of your population is exposed to a hazard with potential for measurable life safety impact, due to its extent and location	15% to 29% of your population is exposed to a hazard with potential for measurable life safety impact, due to its extent and location	30% or more of your population is exposed to a hazard with potential for measurable life safety impact, due to its extent and location
Property	2	Property exposure is 14% or less of the total replacement cost for your community	Property exposure is 15% to 29% of the total replacement cost for your community	Property exposure is 30% or more of the total replacement cost for your community
Economy	1	Loss estimate is 9% or less of the total replacement cost for your community	Loss estimate is 10% to 19% of the total replacement	Loss estimate is 20% or more of the total replacement

Section 3: Risk Assessment



cost for your
community

cost for your
community

The risk ranking for each hazard is then calculated by multiplying the numerical value for the probability of occurrence by the sum of the numerical values for impact. The equation follows: Weighting Factor (1, 2, or 3) X Impact Value (6 to 18) = Hazard Ranking Value. Based on the total for each hazard, a priority ranking is assigned to each hazard of concern (high, medium, low).

3.1.2 Sources for Hazard Data

Historical data, catastrophic potential, relevance to the jurisdiction, and the probability and potential magnitude of future occurrences were all used to identify and prioritize the list of hazards most relevant to Jones County. Hazard data was obtained from various federal, state, and local sources to include:

- Federal Emergency Management Agency (FEMA)
- National Oceanic and Atmospheric Administration (NOAA)
- United States Geological Survey (USGS)
- Iowa Department of Homeland Security and Emergency Management (HSEMD)
- Iowa Department of Natural Resources (DNR)
- Iowa Environmental Mesonet (IEM)
- Jones County Emergency Management
- Jones County Conservation Board
- Jones County Public Health
- Jones County Assessor

3.1.3 Integration and Use

The risk assessment in this Plan serves as the planning area's primary risk assessment for the threats and hazards facing the planning area. It also helps fulfill the requirements for local hazard analysis and risk assessments.

3.2 Hazard Identification and Ranking

Element Addressed in Section

Element B1. Does the plan include a description of the type, location and extent of all natural hazards that can affect the jurisdiction? Does the plan also include information on previous occurrences of hazard events and on the probability of future hazard events? (Requirement 44 CFR § 201.6(c)(2)(i)), including requirement **B1-a**.

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The planning stakeholders conducted a hazard identification process to determine the hazards that threaten the planning area. This section details the methodology and results of this effort.

Through the update, the previously adopted plan's hazards were reviewed by planning stakeholders and determined to be still relevant to the planning area and should be kept in the new update, with some reorganization and regrouping. The following is the list of hazards assessed:

- Animal/Plant/Crop Disease
- Communicable Disease Outbreak
- Critical Infrastructure Failure
- Cyber Incident
- Dam Failure
- Drought
- Earthquake
- Extreme Temperatures
- Flash Flooding
- Hazardous Materials Incident (includes radiological)
- River Flooding
- Severe Thunderstorms
- Severe Winter Storms
- Social Unrest
- Space Weather
- Supply Chain Disruption
- Terrorism and Mass Violence
- Tornadoes
- Wildfire

The planning stakeholders ranked all the hazards identified above based on their likelihood of occurrence and associated impact. The table below demonstrates the hazards and associated ranking:

HAZARDS	RANKING
Severe Winter Storm	22.05
Severe Thunderstorms	21.77
Tornadoes	19.08
Extreme Temperature	15.36
Flash Flooding	14.96
Drought	13.74
River Flooding	11.68
Communicable Disease Outbreak	9.05
Critical Infrastructure Failure	8.58
Animal/Plant/Crop Disease	8.01
Supply Chain Disruption	7.91
Cyber Incident	7.44
HazMat & Radiological	7.40
Terrorism & Mass Violence	5.77

Section 3: Risk Assessment

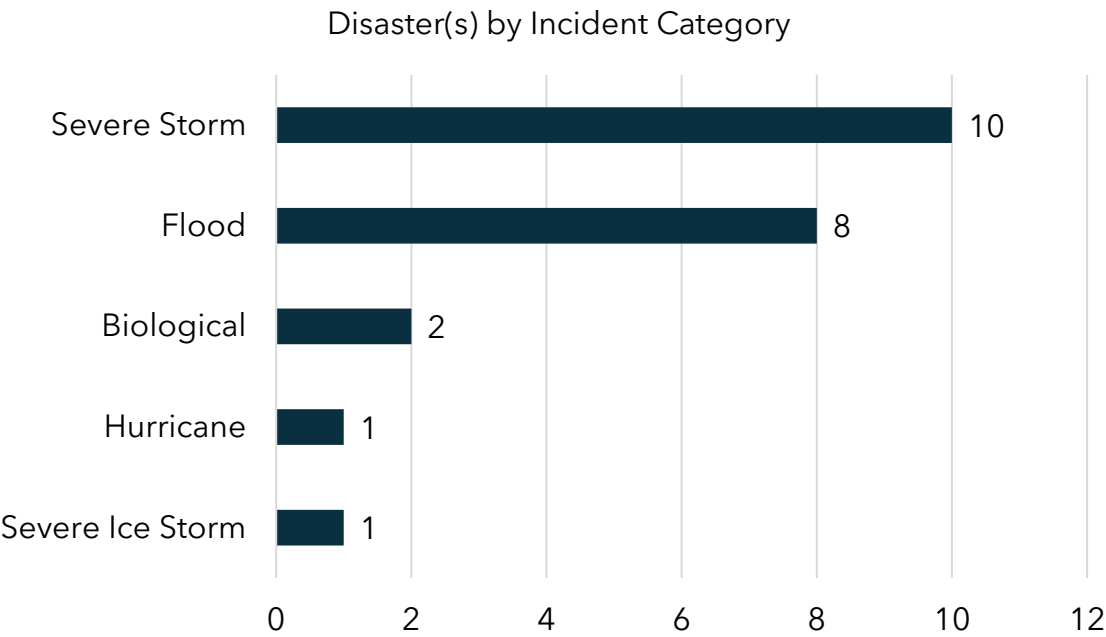


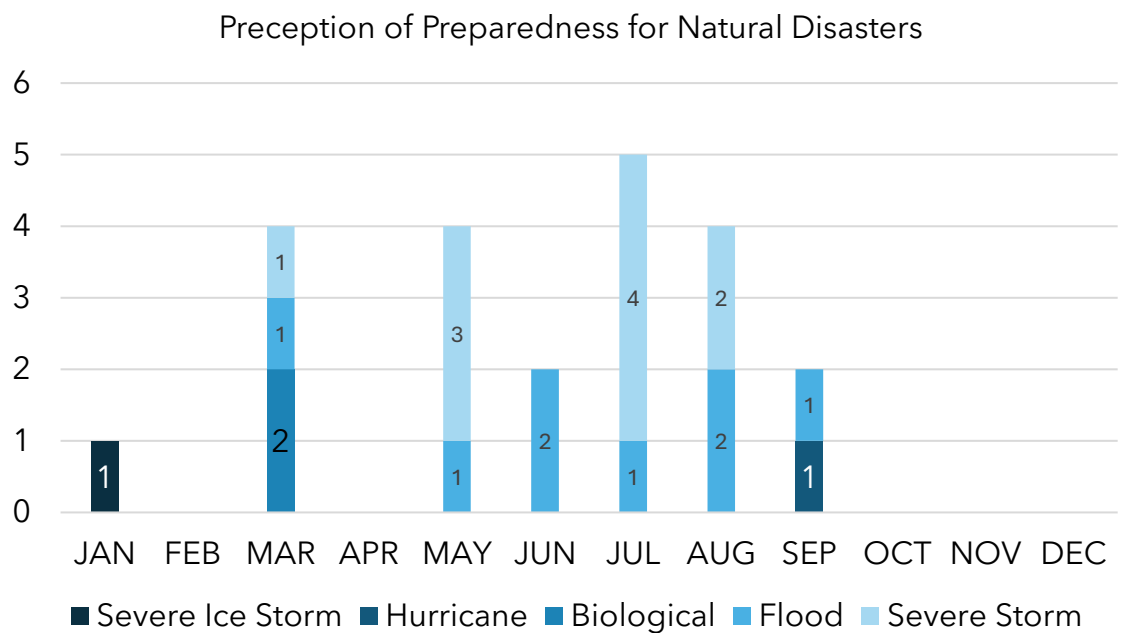
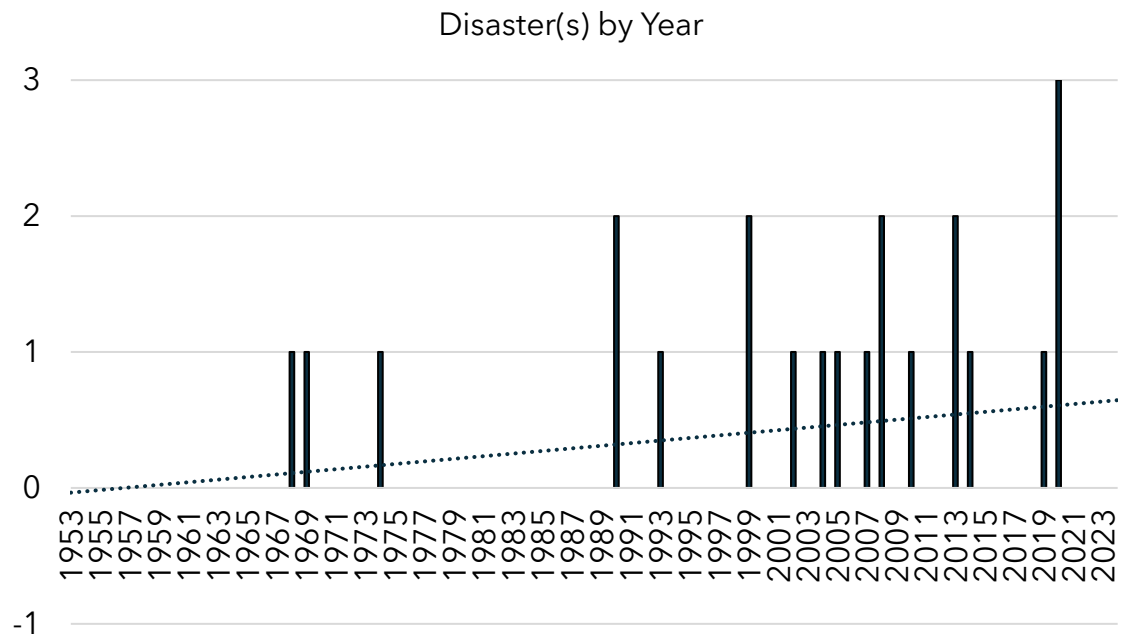
HAZARDS	RANKING
Social Unrest	5.16
Wildfire	5.09
Earthquake	5.02
Dam Failure	4.76
Space Weather	4.02

3.3 Disaster Declaration History

Element Addressed in Section
Element B1. Does the plan include a description of the type, location and extent of all natural hazards that can affect the jurisdiction? Does the plan also include information on previous occurrences of hazard events and on the probability of future hazard events? (Requirement 44 CFR § 201.6(c)(2)(i)), including requirement B1-d .

This summary of disasters does not include statewide declarations that didn’t directly impact Jones County, and the following charts only summarize federal disaster declarations.





3.3.1 Severe Storm

DR-4557 | 08/17/2020 (State Proclamation 2020-27, 2020-32)

The derecho event that swept through Iowa in 2020 was a widespread, long-lived windstorm associated with rapidly moving thunderstorms. This storm produced severe

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winds, often exceeding 100 mph, causing widespread destruction across Iowa, including the planning area. The storm led to extensive damage to homes, farms, businesses, and infrastructure. It knocked out power to hundreds of thousands of Iowans, flattened millions of acres of crops, and caused significant damage to public utilities and facilities.

The planning area, like many other counties in Iowa, was heavily impacted by the disaster. Federal assistance was provided to aid in response efforts, recovery, and rebuilding, offering critical support to individual residents, businesses, and local governments in managing the extensive damage caused by the storm.

State Proclamation 2016-09 and 2016-12 | 09/27/2016 and 11/07/2016

-Proclamation 2016-09, issued on September 27, 2016, by Governor Terry E. Branstad, declared a state of disaster emergency in response to severe storm systems that began on September 21, 2016, and caused significant damage across Iowa. The storms produced heavy rains, flooding, tornadoes, and power outages due to downed power lines and poles, as well as large debris piles. The affected counties included Howard, Jones, Louisa, and Story. Reports from local emergency management officials indicated that local resources were exhausted and state assistance was required to address the impacts and support recovery efforts.

In Jones County, the proclamation activated the Iowa Emergency Response Plan and authorized the deployment of state resources, supplies, equipment, and personnel to assist residents and communities. It also suspended specific procurement regulations to expedite the provision of goods and services necessary for disaster response. Additionally, the Iowa Department of Human Services was authorized to render individual assistance to eligible residents adversely affected by the disaster. This proclamation facilitated the county's ability to recover from the storm's significant impacts, particularly addressing the needs of individuals and families who required urgent assistance.

DR-4187 | 08/05/2014 (State Proclamation 2014-08)

DR-4187 was a major disaster declaration issued in response to severe storms, tornadoes, straight-line winds, and flooding that occurred in Iowa in 2014. These storms caused widespread damage across many parts of the state, including the planning area. The severe weather led to property damage, infrastructure destruction, and agricultural losses, severely affecting the region.

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In the planning area, the storms caused damage to homes, businesses, and public infrastructure. Strong winds and tornadoes downed trees and power lines, resulting in power outages and road blockages. The flooding that followed these storms exacerbated the situation, impacting farmland and causing delays in planting for local farmers. Agricultural losses were significant, with many fields damaged by excessive rain and flooding, leading to a challenging recovery for the local farming community.

The federal disaster declaration provided crucial assistance to the county, enabling recovery efforts. Federal aid supported infrastructure repairs, debris removal, and financial assistance to individuals and businesses affected by the storms. Farmers also benefited from disaster relief programs that helped offset crop losses and restore their operations. Overall, the assistance from DR-4187 was instrumental in helping the planning area recover from the destructive impact of the 2014 severe weather events.

DR-4135 | 07/31/2013

DR-4135 was a major disaster declaration issued in response to the severe storms, tornadoes, and flooding that affected Iowa in 2013. These weather events caused widespread damage across the state, including in the planning area, where the impacts were felt through significant property and infrastructure damage, as well as agricultural losses.

In the planning area, the severe storms and tornadoes damaged homes, businesses, and public buildings. Roads and bridges were also affected, leading to temporary closures and transportation disruptions. Flooding from heavy rainfall worsened the situation by inundating farmland and damaging crops, particularly in low-lying areas. This had a detrimental effect on the agricultural community, with some farmers facing losses due to delayed planting and waterlogged fields.

The disaster declaration enabled the planning area to receive federal assistance for recovery efforts. This included financial aid to individuals and businesses for rebuilding and repairing damaged property, as well as public assistance for infrastructure restoration, such as repairing roads and public utilities. Additionally, farmers received support to help mitigate the losses from crop damage. The federal aid provided through DR-4135 was essential in helping the county recover from the severe storms and flooding, restoring normalcy for both the agricultural sector and the broader community.

DR-4126 | 07/02/2013 (State Proclamation 2013-10)

DR-4126 was a major disaster declaration issued in response to severe storms, straight-line winds, and flooding that impacted Iowa during the summer of 2013. These extreme weather events caused considerable damage across many counties, including the planning area.

In the planning area, the combination of heavy rainfall and strong winds caused widespread damage to homes, businesses, and infrastructure. Flooding from these storms led to waterlogged roads, damaged bridges, and inundated farmland, which significantly disrupted daily life and agricultural activities. For the local farming community, the excess water caused delays in planting and led to crop damage, particularly in low-lying areas that were most affected by the floods.

The disaster declaration allowed the planning area to receive federal assistance, which was crucial in addressing both immediate needs and long-term recovery efforts. This included funding for infrastructure repair, such as fixing roads and restoring public utilities, as well as financial aid to affected individuals and businesses. Farmers received support through disaster relief programs aimed at mitigating crop losses and helping with the recovery of agricultural operations. The aid provided through DR-4126 played a vital role in helping the planning area recover from the storms, restoring damaged infrastructure and supporting the local economy through agricultural recovery efforts.

State Proclamation 2011-02 | 01/31/2011

Proclamation 2011-02, issued on February 4, 2011, by Governor Terry E. Branstad, declared a state of disaster emergency due to a severe winter weather system that began on January 31, 2011, and continued across portions of Iowa. This storm system produced blizzard conditions, including significant snowfall, high winds, and dangerously low temperatures. These conditions created hazardous situations and prompted local officials to request state assistance to respond to and recover from the effects of the storm.

The proclamation specifically identified Delaware, Jackson, Jones, and Lee counties as being impacted by the severe weather. In Jones County, the storm caused widespread disruptions, including impassable roads, hazardous travel conditions, and challenges to maintaining essential services due to snow accumulation and extreme cold. The proclamation authorized state government resources to provide necessary goods and services to assist these counties during recovery efforts. This support was critical in

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addressing immediate needs and ensuring public safety during and after the severe winter weather event.

DR-1930 | 07/29/2010 (State Proclamation 2010-26, 2010-29, 2010-32)

DR-1930 was a major disaster declaration issued in response to severe storms, flooding, and tornadoes that struck Iowa in the summer of 2010. These events caused extensive damage across the state, including significant impacts on the planning area.

In the planning area, heavy rainfall led to widespread flooding, which affected homes, businesses, and critical infrastructure. The flooding washed out roads, damaged bridges, and caused power outages in several areas. Agricultural lands were heavily impacted, with fields becoming waterlogged and crops being damaged, leading to significant financial strain for local farmers. The storms also caused localized tornado activity, contributing to the destruction of property and further complicating recovery efforts.

The disaster declaration provided much-needed federal assistance for the planning area. Federal aid helped with emergency response efforts, debris removal, and the repair of public infrastructure, such as roads and utilities. Individual assistance programs offered financial support to residents and business owners who suffered property damage. Farmers also received disaster relief to help offset crop losses and recover from the agricultural damage caused by the floods. Overall, the assistance from DR-1930 played a crucial role in helping the planning area recover from the severe storms and flooding, restoring infrastructure and supporting the local agricultural economy.

DR-1763 | 05/27/2008 (State Proclamation 2008-48, 2008-47, 2008-46, 2008-45, 2008-44, 2008-43, 2008-42, 2008-41, 2008-40, 2008-40, 2008-39, 2008-38, 2008-37, 2008-35, 2008-32, 2008-31, 2008-30, 2008-29, 2008-28, 2008-26, 2008-25, 2008-24, 2008-20, 2008-13, 2008-11, 2008-10, 2008-09, 2008-08)

DR-1763 was a major disaster declaration issued in response to severe storms, tornadoes, and flooding that affected Iowa in the spring of 2008. This disaster had a widespread impact across the state, including significant effects in the planning area.

In the planning area, the combination of heavy rains and severe storms led to extensive flooding, which caused damage to homes, businesses, and public infrastructure. Many roads and bridges were washed out or damaged, leading to transportation disruptions. The flooding also inundated farmlands, damaging crops and delaying the planting season, which had a substantial economic impact on the local agricultural community.

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Some areas experienced structural damage from tornadoes and high winds, further complicating recovery efforts.

The federal disaster declaration allowed the planning area to access critical resources for recovery. Federal aid supported immediate response efforts such as evacuations and debris removal, while long-term assistance helped repair damaged infrastructure, including roads and public buildings. Financial assistance programs were made available to homeowners, businesses, and farmers to help them recover from property damage and crop losses. DR-1763 was vital in helping the planning area rebuild after the severe storms and flooding, restoring public services and supporting the agricultural sector in its recovery.

State Proclamation 2008-03 | 04/29/2008

The proclamation issued by the Governor of Iowa on April 29, 2008, declares a State of Disaster Emergency for Jones County, Iowa, due to severe storm systems that began on April 23, 2008. These storm systems brought heavy rains and severe thunderstorms, causing widespread damage to private and public property, including residences, businesses, infrastructure, and agriculture.

The proclamation acknowledges the need for state assistance in response to the severe weather impacts, highlighting the necessity of flood response resources. The order authorizes state and local governments to provide aid, including goods and services, to support recovery efforts for those affected by the event.

DR-1688 | 03/14/2007

DR-1688 was a major disaster declaration issued in response to the severe storms that affected Iowa, including the planning area, in 2007. The storms brought heavy rainfall, high winds, and flooding, which caused widespread damage to homes, businesses, infrastructure, and agriculture in the region.

In the planning area, the storms resulted in significant flooding that inundated roads, bridges, and farmland. The floodwaters damaged crops, delayed planting, and disrupted agricultural activities, causing financial strain for local farmers. High winds and rain also led to property damage, particularly to homes and commercial buildings, as well as public infrastructure like roads and utilities.

The federal disaster declaration allowed the planning area to access vital resources for both immediate response and long-term recovery efforts. Federal aid supported debris

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removal, emergency repairs, and infrastructure restoration. Residents and businesses impacted by the storms were able to receive financial assistance to help with repairs and recovery. Farmers were provided with disaster relief programs to help offset crop losses and assist in the recovery of agricultural operations. Overall, the assistance provided under DR-1688-IA played a crucial role in helping the planning area recover from the severe storms of 2007, restoring infrastructure and supporting the local economy.

DR-1518 | 05/25/2004

DR-1518 was a major disaster declaration issued in response to the severe storms, tornadoes, and flooding that affected Iowa, including the planning area, in 2004. These storms brought heavy rainfall, strong winds, and localized flooding, which caused significant damage to properties, infrastructure, and agriculture in the region.

In the planning area, the severe weather resulted in flooding that damaged homes, roads, and public infrastructure. Many roads and bridges were washed out or blocked by debris, leading to transportation disruptions. Farmland in low-lying areas was also impacted, with floodwaters damaging crops and causing delays in planting, which created financial strain for farmers.

The disaster declaration enabled the planning area to receive federal assistance to support recovery efforts. This included funding for repairing damaged infrastructure, such as roads and public utilities, as well as financial aid to homeowners and businesses affected by the storm. Farmers received disaster relief to help offset crop losses and recover from the damage to agricultural operations. The federal assistance provided under DR-1518-IA was crucial in helping the planning area rebuild and recover from the severe storms and flooding, ensuring that public services were restored and that the local economy could recover from the agricultural losses.

DR-1282 | 07/22/1999

DR-1282 was a major disaster declaration issued in response to the severe storms and flooding that struck Iowa, including the planning area, in 1999. These storms brought intense rainfall, strong winds, and flooding, which caused widespread damage to homes, businesses, and infrastructure throughout the region.

In the planning area, the severe weather led to significant flooding, damaging homes, roads, and bridges. Public infrastructure, including utilities and transportation routes, was heavily impacted, leading to disruptions in services and access. The agricultural sector in

the county was also affected, with floodwaters inundating farmland, causing crop damage, and delaying planting, resulting in financial strain for local farmers.

The federal disaster declaration allowed the planning area to receive critical assistance for both immediate recovery efforts and long-term rebuilding. Federal aid supported the repair of damaged infrastructure, including roads and utilities, while financial assistance programs helped individuals and businesses recover from property damage. Farmers in the area benefited from disaster relief programs designed to mitigate crop losses and restore agricultural productivity. Overall, the aid provided through DR-1282-IA was essential in helping the planning area recover from the severe storms and flooding of 1999, ensuring that the community and local economy could rebuild.

DR-1277 | 05/21/1999

DR-1277 was a major disaster declaration issued in response to the severe storms, tornadoes, and flooding that impacted Iowa, including the planning area, in 1999. These weather events caused widespread damage across the state, with the planning area experiencing significant destruction to homes, infrastructure, and agricultural lands.

In the planning area, the severe storms and tornadoes damaged buildings, downed power lines, and blocked roads with debris. Heavy rainfall resulted in flash flooding, which inundated homes and businesses, causing water damage and forcing evacuations in some areas. Farmland was also heavily affected, with fields submerged under water, leading to delayed planting and crop losses, which negatively impacted the local agricultural economy.

The federal disaster declaration provided much-needed relief to the planning area. Federal assistance supported emergency response efforts, such as debris removal and road clearance, and helped repair damaged infrastructure, including roads, bridges, and public utilities. Financial aid was also made available to individuals and businesses to help them recover from property damage. Additionally, farmers received support through disaster relief programs aimed at mitigating crop losses and restoring agricultural operations. The federal aid provided under DR-1277-IA played a crucial role in helping the planning area recover from the severe storms, tornadoes, and flooding of 1999, facilitating the restoration of services and the local economy.

3.3.2 Flood

DR-4421 | 03/23/2019

DR-4421 was a major disaster declaration issued in response to the flooding that occurred in Iowa during the spring of 2019. Heavy rains and rapid snowmelt caused significant flooding across much of the state, including the planning area. The flooding led to widespread damage to homes, farms, roads, and infrastructure, severely impacting agricultural areas and rural communities.

In the planning area, the impacts of this disaster were substantial, with floodwaters damaging crops, properties, and local infrastructure. The county's roads, bridges, and public utilities were affected, disrupting transportation and daily activities for residents. Many farms experienced losses due to the inundation of fields, which delayed planting and caused significant financial strain for the local agricultural economy.

The disaster declaration enabled federal assistance to flow into the planning area, providing resources for immediate response efforts such as evacuations, debris removal, and emergency repairs. Long-term recovery assistance helped repair infrastructure, restore damaged public services, and offer financial aid to affected individuals and businesses, including farmers who needed assistance to recover from crop losses and property damage. This federal support was crucial in helping the county recover from one of the most significant flooding events in recent years.

DR-1420 | 06/19/2002

DR-1420 was a major disaster declaration issued in response to the flooding that occurred in Iowa in 2002, significantly impacting the planning area and other areas. Heavy rainfall during this period led to extensive flooding that caused widespread damage to homes, businesses, roads, and agricultural lands.

In the planning area, the floodwaters inundated roads and bridges, making transportation difficult and isolating some areas. Residential properties and commercial buildings experienced water damage, leading to costly repairs and disruptions to daily life. Farmland was particularly hard hit, with many fields submerged, causing crop losses and delaying the agricultural season. This had a negative financial impact on the farming community, which relies heavily on timely planting and harvesting.

The federal disaster declaration provided the planning area with access to important recovery resources. Federal assistance supported the repair of damaged infrastructure,

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including roads, bridges, and public utilities. Financial aid was made available to residents and businesses to help with property repairs and recovery efforts. Additionally, farmers were offered disaster relief to mitigate crop losses and restore agricultural operations. The support provided under DR-1420-IA was vital in helping the planning area recover from the 2002 flooding, allowing the community to rebuild and return to normalcy.

DR-996 | 07/09/1993

DR-996 was a major disaster declaration issued in response to the catastrophic flooding that occurred during the Great Flood of 1993, one of the most devastating floods in U.S. history. The planning area, like much of Iowa and the Midwest, experienced widespread flooding that severely impacted homes, infrastructure, and agricultural lands.

In the planning area, the floodwaters inundated vast areas, damaging homes, businesses, and public infrastructure, including roads and bridges. Many residents were displaced, and local businesses suffered significant losses due to water damage and prolonged closures. The agricultural sector was particularly hard hit, with thousands of acres of farmland submerged, resulting in extensive crop losses. The flooding delayed planting and harvesting, leading to financial difficulties for many farmers in the county.

The federal disaster declaration provided essential resources to aid in recovery efforts. Federal assistance helped with immediate needs such as evacuations, emergency shelter, and debris removal. Long-term recovery efforts included financial aid to repair and rebuild homes and businesses, as well as infrastructure restoration, such as fixing damaged roads and bridges. Farmers received disaster relief to help offset the severe crop losses and restore agricultural operations. The aid provided through DR-996-IA was critical in helping the planning area recover from the 1993 floods, allowing the community to rebuild and stabilize after the extensive damage.

DR-879 | 09/06/1990

DR-879 was a major disaster declaration issued in response to the flooding that occurred in Iowa, including the planning area, in 1990. Heavy rainfall led to significant flooding, which caused widespread damage to homes, businesses, infrastructure, and farmland across the region.

In the planning area, floodwaters inundated roads, bridges, and public infrastructure, leading to transportation disruptions and damage to utilities. Many homes and businesses were affected by water damage, forcing evacuations and causing financial

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hardship for property owners. Farmland was also significantly impacted, with floodwaters destroying crops and delaying planting, which put a strain on the local agricultural economy.

The federal disaster declaration provided crucial assistance to the planning area, enabling recovery efforts through financial aid and resources. Federal assistance helped with immediate needs, such as evacuations, debris removal, and emergency repairs to infrastructure. Long-term recovery efforts included repairing roads, bridges, and utilities, as well as providing financial aid to individuals and businesses affected by the flooding. Farmers received disaster relief to mitigate crop losses and assist with restoring agricultural operations. The federal support provided under DR-879-IA was vital in helping the planning area recover from the 1990 flooding, enabling the community to rebuild and return to normalcy.

DR-868 | 05/26/1990

DR-868 was a major disaster declaration issued in response to the flooding that affected Iowa, including the planning area, in 1990. This flooding event resulted from heavy rainfall, which caused rivers and streams to overflow, leading to widespread water damage across the region.

In the planning area, the flooding caused severe damage to homes, businesses, roads, and bridges. Residential areas experienced water damage, forcing evacuations and displacing families. The county's infrastructure also suffered, with many roads and bridges washed out or blocked, disrupting transportation and emergency services. The local agricultural sector was significantly impacted as well, with floodwaters damaging crops and delaying planting, resulting in financial losses for farmers.

The disaster declaration allowed the planning area to receive federal assistance to aid in recovery efforts. Federal resources were used for immediate response actions, such as debris removal, emergency shelter, and repairing essential services. Long-term recovery efforts focused on rebuilding damaged infrastructure and providing financial support to residents and businesses affected by the flooding. Additionally, farmers received disaster relief to help recover from crop losses and restore their agricultural operations. The federal aid provided under DR-868-IA was essential in helping the planning area recover from the 1990 flooding, allowing the community to rebuild and restore normalcy.

DR-443 | 06/24/1974

DR-443 was a major disaster declaration issued in response to the flooding that occurred in Iowa, including the planning area, in 1974. This flood event was caused by heavy rainfall that led to rivers and streams overflowing, resulting in widespread damage across the region.

In the planning area, the flooding caused significant damage to homes, businesses, and public infrastructure. Many residential properties experienced water damage, displacing families and requiring emergency shelter. Roads, bridges, and utilities were severely impacted, leading to transportation disruptions and affecting essential services. The agricultural sector also faced challenges, as floodwaters inundated farmlands, damaging crops and delaying planting, which had a negative economic impact on local farmers.

The federal disaster declaration provided much-needed assistance to the planning area. Federal aid helped with immediate recovery efforts such as evacuations, debris removal, and temporary housing for displaced residents. Additionally, long-term recovery funds were allocated to repair damaged infrastructure, including roads, bridges, and public utilities. Farmers also received disaster relief to help recover from crop losses and restore agricultural operations. The assistance provided under DR-443-IA was critical in helping the planning area recover from the 1974 flood, enabling the community to rebuild and restore essential services.

DR-269 | 08/14/1969

DR-269 was a major disaster declaration issued in response to the flooding that occurred in Iowa, including the planning area, in 1969. The flooding was triggered by heavy rains that caused rivers and streams to overflow, leading to widespread damage throughout the region.

In the planning area, the floods severely impacted homes, businesses, and infrastructure. Many residents experienced water damage to their properties, forcing evacuations and creating a need for temporary housing and emergency relief efforts. Roads and bridges were washed out or damaged, disrupting transportation and hindering the delivery of essential services. The agricultural sector in the planning area also suffered, as floodwaters submerged farmland, destroyed crops, and delayed planting, which led to financial strain for local farmers.

The federal disaster declaration provided vital assistance to the planning area, aiding both immediate response and long-term recovery. Federal funds helped with

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emergency measures such as debris removal, temporary shelter, and repairs to essential infrastructure like roads and public utilities. Farmers were also provided with disaster relief to mitigate the losses in agriculture and help restore farming operations. The support offered through DR-269-IA was instrumental in enabling the planning area to recover from the 1969 flooding, restoring normalcy and helping the local economy rebuild after the devastation.

DR-248 | 08/04/1968

DR-248 was a major disaster declaration issued in response to the flooding that occurred in Iowa, including the planning area, in 1968. The flood was caused by prolonged heavy rainfall, which led to rivers and streams overflowing and causing extensive damage throughout the region.

In the planning area, the flooding resulted in significant damage to homes, businesses, and infrastructure. Many residential properties were flooded, forcing evacuations and displacing families. Roads, bridges, and public utilities were severely impacted, with floodwaters washing out transportation routes and disrupting essential services. The agricultural sector in the county was particularly affected, as farmlands were inundated, damaging crops and delaying planting, which caused economic difficulties for farmers.

The federal disaster declaration enabled the planning area to receive crucial assistance for recovery efforts. Federal aid supported immediate response measures, including evacuations, debris removal, and emergency shelter for displaced residents. Long-term recovery funds were used to repair damaged infrastructure, such as roads and bridges, and restore public services. Additionally, farmers received disaster relief to help mitigate crop losses and restore agricultural operations. The federal assistance provided under DR-248-IA played a vital role in helping the planning area recover from the 1968 flood, ensuring the community could rebuild and return to normal.

3.3.3 Biological

DR-4483 | 03/23/2020

The COVID-19 pandemic prompted a major disaster declaration under DR-4483, which addressed the public health emergency that swept across the United States, including the planning area. This disaster declaration allowed for federal assistance to support state and local governments in responding to the unprecedented health crisis.

In the planning area, as in other areas, the pandemic had far-reaching impacts. Local healthcare systems were strained as hospitals and clinics faced a surge in patients. The disaster declaration provided resources to strengthen healthcare infrastructure, support testing and vaccination efforts, and enhance medical care capabilities. Businesses, particularly small ones, suffered significant economic setbacks due to shutdowns and restrictions, and federal aid helped provide financial relief through grants and loans.

The disaster declaration also supported individuals affected by the pandemic through programs such as unemployment assistance and food aid. Local schools and public services adapted to closures and virtual operations, and the declaration helped ensure that critical services could continue during the disruption. Overall, the federal disaster response helped mitigate the health, economic, and social impacts of the COVID-19 pandemic in the planning area.

EM-3480 | 03/13/2020

EM-3480 was an emergency declaration issued on March 13, 2020, in response to the onset of the COVID-19 pandemic. This declaration was primarily focused on immediate response efforts and short-term assistance. It allowed for rapid mobilization of federal resources to support healthcare systems, implement public health measures like testing and quarantining, and provide emergency protective measures. The primary goal of DR-3480 was to manage the public health crisis during the early stages of the pandemic, helping to stabilize healthcare systems and ensure public safety.

In contrast, DR-4483 was a major disaster declaration that provided broader and more long-term federal assistance. Declared later in 2020, DR-4483 expanded beyond immediate emergency needs to address the extended impacts of the pandemic. This disaster declaration allowed for long-term recovery efforts, such as unemployment assistance, business relief programs, and sustained public health initiatives like vaccination campaigns.

The two declarations differ in scope and timing. DR-3480 was issued at the beginning of the pandemic to address urgent healthcare and response needs, while DR-4483 provided a more comprehensive federal response to the prolonged social, economic, and health impacts of COVID-19. In the planning area, DR-3480 helped manage the initial outbreak, while DR-4483 offered broader support for the county's long-term recovery, including economic and public health interventions.

3.3.4 Hurricane

EM-3239 | 09/10/2005

EM-3239 was an emergency declaration issued in 2005 in response to the far-reaching impacts of Hurricane Katrina. While the planning area, was not directly affected by the hurricane itself, the emergency declaration was made to support the state's efforts to assist evacuees and provide resources to those displaced by the disaster.

In the planning area, as in other parts of Iowa, local agencies and communities played a role in accommodating evacuees who were relocated from the Gulf Coast. The county, along with state and federal agencies, helped provide temporary housing, food, medical care, and other support services for those displaced by the hurricane. Additionally, local resources were used to assist in logistics, such as setting up shelters and providing transportation for evacuees.

The emergency declaration provided federal resources to assist with these efforts, ensuring that communities like the planning area had the financial and logistical support needed to care for evacuees. Federal aid helped cover the costs of providing emergency services, including housing, medical care, and other necessities for displaced individuals. This support was crucial in managing the influx of evacuees and ensuring their needs were met while recovery efforts were ongoing in the areas directly impacted by Hurricane Katrina.

3.3.4 Severe Ice Storm

DR-1737 | 01/04/2008

DR-1737 was a major disaster declaration issued in response to the 2008 ice storm that severely impacted Iowa, including the planning area. The ice storm caused widespread damage due to heavy ice accumulation on power lines, trees, and roads. As ice built up, it caused power outages, transportation disruptions, and hazardous conditions across the region.

In the planning area, the storm downed trees and power lines, leading to extended power outages that affected homes, businesses, and critical services. Many roads became impassable due to fallen trees and ice, creating dangerous travel conditions and isolating some areas. The cold weather, combined with the lack of electricity, posed significant challenges to residents, especially those who relied on electric heating.

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The disaster declaration enabled the planning area to receive federal assistance to address the immediate impacts of the storm. This assistance supported efforts to restore power, clear debris from roads, and ensure that essential services could operate. Financial aid was provided to residents for home repairs and to local governments for infrastructure restoration. The disaster relief also helped local utilities repair damaged power lines and improve resilience against future storms. Overall, federal support from DR-1737-IA was crucial in helping the planning area recover from the devastating 2008 ice storm, restoring normalcy and ensuring public safety.

3.4 Risk Assessment

3.4.1 Hazard Profiles

Element Addressed in Section

Element B1. Does the plan include a description of the type, location and extent of all natural hazards that can affect the jurisdiction? Does the plan also include information on previous occurrences of hazard events and on the probability of future hazard events? (Requirement 44 CFR § 201.6(c)(2)(i)), including requirement **B1-b**, **B1-c**, **B1-e**, and **B1-f**.

Element B2. Does the plan include a summary of the jurisdiction's vulnerability and the impacts on the community from the identified hazards? Does this summary also address NFIP insured structures that have been repetitively damaged by floods? (Requirement 44 CFR § 201.6(c)(2)(ii)), including requirements, **B2-a** and **B2-b**.

The hazard profiles in this section consist of the following elements:

- **Description:** A general overview of the hazard being considered.
- **Location/Extent:** Discuss what parts of the planning area are most likely to be impacted by the hazard.
- **Magnitude/Severity:** Summarizes the anticipated magnitude and severity of a hazard incident based mainly on past occurrences and specific aspects of the planning area. It also factors in the speed of onset and duration. Calculated and assessed using the incident of record, which represents an anticipated worst-case scenario or common occurrence.
- **Past Occurrences:** Overview history of the hazard's occurrences, compiled from multiple data sources, to include information provided by the planning team and the public. Significant incidents are profiled in greater detail and include scope, severity, and magnitude, and known impacts.
- **Likelihood of Future Occurrences:** Estimates the likelihood or probability of future occurrences of the hazard. Note that while the frequency of natural hazards

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can generally be estimated based on past data and best available science, estimating the frequency of many human-caused hazards is much more speculative due to the generally smaller number of incidents and uncertainty around attacker capabilities and intentions. The identified probabilities are not quantified but rather built on history. If it has happened before, it will most likely occur again. If it hasn't happened locally, the chance of it occurring lessons unless the hazard is becoming more prevalent across the Nation.

- **Climate Change Considerations:** Discusses how the projected impacts of climate change may affect the likelihood and severity of the hazard in the future.
- **Vulnerability:** Analysis of potential impacts on the following categories in the planning area: people, economy, built environment, and general property (including critical infrastructure), historical, cultural, and natural environment, future land use and development (how projected trends in land use, and development have the potential to increase or decrease the impact of the hazard).
- **Consequence Summary:** Summarizes the key consequences of the hazard and its impact on the public; the economic condition of the planning area; historical, natural, and cultural environment; build environment, general property, and critical infrastructure; public confidence in government; continuity of operations including continued delivery of government services; and cascading hazards.

3.4.2 Animal/Plant/Crop Disease

Probability	Population Impact	Property Impact	Economy Impact	Overall Hazard Ranking
1.88	1.38	1.44	1.44	8.01

3.4.2.1 Description

An Animal/Plant/Crop Disease disaster hazard occurs when infectious diseases or invasive pests spread through livestock, crops, or plant populations, leading to severe economic, environmental, and public health consequences. These hazards can originate from viruses, bacteria, fungi, parasites, or non-native species that disrupt natural ecosystems and agricultural production.

Animal disease hazards involve outbreaks in livestock, such as foot-and-mouth disease or avian influenza, which can decimate animal populations. In extreme cases, widespread culling of infected or at-risk animals is necessary to prevent further spread. These outbreaks not only threaten food supplies but can also lead to significant economic losses for farmers and ranchers. Additionally, some diseases, known as zoonotic diseases,

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can spread from animals to humans, further complicating disaster response efforts and creating public health risks.

On the plant and crop side, crop diseases such as wheat rust or citrus greening can severely reduce agricultural yields, resulting in higher food prices and food insecurity. Invasive species and pests, such as the emerald ash borer or gypsy moth, can damage forests, crops, and plant life, often requiring expensive pest management and control measures. These diseases and pests can spread rapidly, particularly in areas with large monocultures, making prevention and containment critical.

The economic and environmental impacts of these disease hazards are substantial. They include not only the immediate loss of production but also long-term damage to ecosystems and biodiversity. Preventative measures, such as monitoring systems, quarantine protocols, vaccination programs, and the development of disease-resistant crops, are essential to managing these hazards. International cooperation is also crucial in mitigating the spread of highly contagious diseases across borders, with global organizations like the World Organization for Animal Health (OIE) and the Food and Agriculture Organization (FAO) coordinating efforts to combat these threats.

Overall, animal, plant, and crop disease hazards require proactive measures to prevent outbreaks, rapid response when they occur, and long-term strategies to protect the environment and food supply from future threats.

3.4.2.2 Location

The entire planning area is susceptible to the hazard of animal, plant, and crop diseases, as these threats can spread across various types of properties, ecosystems, and communities. However, the primary focus for prevention, mitigation, and response efforts should be on agricultural properties, as they are particularly vulnerable due to the concentration of livestock and crop production.

Applicable Jurisdictions	
Unincorporated Jones County	City of Oxford Junction
City of Anamosa	City of Wyoming
City of Martelle	Anamosa CSD
City of Monticello	Midland CSD
City of Morley	Monticello CSD
City of Olin	Olin CSD
City of Onslow	Sacred Heart School
	St. Patrick School
Applicable	Not Applicable



3.4.2.3 Magnitude/Severity

The magnitude and severity of an animal, plant, or crop disease disaster hazard in the planning area, is determined by several key factors, starting with the spread rate and geographic range of the disease. A disease that rapidly spreads over large areas, affecting multiple farms or ecosystems, is considered higher in magnitude. Effective containment through biosecurity measures and quarantines can reduce the severity. Additionally, the virulence and mortality rate of the disease are critical in measuring severity. Highly virulent diseases that result in mass culling of livestock or the loss of crop yields lead to more severe impacts due to their direct effect on agricultural productivity. The mortality rate in affected animals or plants also plays a role, with higher mortality correlating to a higher severity rating.

The economic losses associated with the disease are another key indicator of severity. This includes both the direct loss of crops and livestock and the broader indirect costs such as market disruptions, trade restrictions, and recovery efforts. The longer an outbreak persists, particularly across growing seasons or livestock cycles, the more severe its impact. The difficulty of intervention also influences severity, as delays in implementing vaccines, pest control, or quarantines can lead to greater spread and damage. Finally, public health and environmental impacts must be considered, particularly with zoonotic diseases that pose risks to humans. Long-term environmental degradation, such as the loss of biodiversity, can also elevate the hazard's severity, affecting both agricultural output and ecosystem health.

The following is a severity chart used to assess the impact and intensity of an animal, plant, or crop disease disaster hazard in the planning area. This chart categorizes the magnitude of a hazard based on key factors such as the spread and geographic range of the disease, mortality rates, economic losses, and the effectiveness of intervention measures. These severity levels are determined by analyzing historical data and potential risks, using guidelines provided by agencies like FEMA, the USDA, and local resources such as the Jones County Hazard Mitigation Plan. By evaluating the financial toll on the agricultural sector, public health risks (particularly with zoonotic diseases), and the effectiveness of containment efforts, this chart helps authorities prioritize responses and allocate resources accordingly.

Severity Levels
Moderate – Localized outbreaks affecting a limited number of farms, with manageable losses through containment measures, quarantine, and treatment.

Severity Levels

High – Widespread disease affecting large portions of the planning area’s agricultural production, requiring extensive mitigation efforts, culling, or crop destruction, and possibly resulting in significant economic losses and environmental damage.

Catastrophic – A rapid, uncontrollable spread of disease that devastates livestock or crop production across the county, leading to long-term economic, environmental, and public health challenges. This could include prolonged food supply disruptions, substantial government intervention, and possibly a declaration of a national disaster.

3.4.2.4 Past Occurrences

Here are some examples of past occurrences of animal, plant, or crop disease hazards in Iowa and the region, including impacts on the planning area:

- **Avian Influenza Outbreak (2015):** This highly pathogenic bird flu affected multiple counties in Iowa, including the planning area and nearby areas. The outbreak led to the culling of millions of birds across the state to prevent the disease from spreading further. The economic impact was severe, with losses estimated at over \$1 billion due to the destruction of poultry, closure of farms, and restrictions on egg and poultry exports.
- **Emerald Ash Borer Invasion (2009-Present):** First detected in Iowa in 2010, the Emerald Ash Borer (EAB), an invasive insect that kills ash trees, has spread throughout the state, including the planning area. By 2015, the planning area was under quarantine to prevent further spread. The loss of ash trees has had both environmental and economic impacts, leading to increased tree removal costs for homeowners and municipalities.
- **Porcine Epidemic Diarrhea Virus (PEDV) Outbreak (2013):** This outbreak affected swine populations across Iowa, with significant cases reported in eastern Iowa counties near the planning area. PEDV caused high mortality in piglets, severely impacting pork production. The outbreak led to economic losses for farmers due to the high death rate in young pigs and the associated cost of disease management.

These examples highlight the recurring nature of animal, plant, and crop disease hazards in Iowa, demonstrating their capacity to cause widespread economic and environmental damage across agricultural communities.

3.4.2.5 Likelihood of Future Occurrence

The likelihood of future occurrences of animal, plant, or crop disease hazards in the planning area, remains relatively high based on local, regional, and state trends. Given Iowa's position as a major agricultural state, with the planning area heavily reliant on livestock and crop production, the risk of outbreaks is ever-present. Past occurrences of diseases like avian influenza, Porcine Epidemic Diarrhea Virus (PEDV), and the spread of invasive species such as the Emerald Ash Borer suggest that future outbreaks are not only possible but likely. The continued presence of these threats, combined with the region's dense agricultural activity, increases the chances of future disease hazards.

Regional and state data show that Iowa's agricultural sector is particularly vulnerable to the introduction and spread of diseases. For example, outbreaks of avian influenza in nearby counties and across Iowa in 2015 resulted in large-scale economic losses and highlighted the need for ongoing surveillance and prevention measures. The Iowa Department of Agriculture and Land Stewardship (IDALS) and USDA continue to monitor animal health closely, but the interconnectedness of farms, transportation networks, and global trade mean that new diseases could emerge at any time. Similarly, plant and crop diseases, exacerbated by climate change, are an ongoing threat, with increasing pest invasions like the Emerald Ash Borer spreading across Iowa's forests and farms.

Given these factors, the planning area is likely to experience future incidents involving animal, plant, or crop disease hazards, making continued vigilance and mitigation efforts essential for reducing the potential impact.

3.4.2.6 Climate Change Considerations

While animal, plant, or crop disease hazards are not traditionally considered natural hazards, climate change can still influence the likelihood and severity of such outbreaks. Climate change can alter ecosystems and weather patterns in ways that create favorable conditions for the spread of diseases or invasive pests. Warmer temperatures and increased humidity, for example, can expand the geographic range and lifecycle of certain pests or pathogens, potentially introducing new diseases to regions like the planning area. Additionally, changing precipitation patterns may increase the risk of plant and crop diseases, such as mold and fungal infections, which thrive in wetter, warmer climates.

However, because this hazard is not inherently caused by climate-related factors, climate change considerations are typically secondary when assessing the overall risk. The spread of animal, plant, or crop diseases is more closely related to factors like global

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trade, biosecurity practices, and the density of agricultural activities in the region. Nevertheless, as climate change alters ecosystems and weather patterns, it is important to consider its indirect influence on the emergence and spread of these hazards. Local mitigation efforts should take into account both current agricultural practices and the potential long-term effects of a changing climate on disease dynamics.

3.4.2.7 Vulnerability

People

The local population could face serious health and social consequences, with vulnerable and underserved populations at greater risk of adverse impacts. In cases where the disease is zoonotic, such as avian flu, public health risks would be heightened for individuals with pre-existing conditions, older adults, and those with limited healthcare access. Underserved populations, including the 2.9% of residents without health insurance and those living in poverty (11.4%), may experience difficulties accessing timely medical care, increasing the likelihood of severe illness and complications. Public health measures such as quarantines or movement restrictions could disproportionately impact low-income households, individuals with disabilities (13.1% of the population), and those reliant on public transportation, further limiting access to healthcare, employment, and essential services.

Beyond public health concerns, the strain on emergency services and public resources could deepen disparities. Vulnerable populations, such as residents in group quarters or assisted living facilities, may experience greater isolation due to movement restrictions, exacerbating social and mental health issues. Those without personal transportation—1.4% of households in Jones County—could struggle to access healthcare, food, and emergency services, creating further inequities in outbreak response. School closures or service disruptions would particularly impact underserved families, especially single-parent households and those reliant on school-based nutrition programs. The long-term consequences of an outbreak could further entrench economic and social disparities, making it more difficult for the county's most at-risk populations to recover and rebuild resilience.

Economy

The local economy would likely face significant disruptions, particularly due to the county's reliance on agriculture. The agricultural sector, which includes both crop production and livestock farming, would be hit hardest. A disease that affects livestock, such as avian influenza or foot-and-mouth disease, could lead to mass culling of animals,

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halting production and leading to direct financial losses for farmers. Similarly, a plant or crop disease could result in lower crop yields, threatening the livelihood of crop farmers. These disruptions would not only decrease income for local farmers but also negatively affect related industries such as feed suppliers, transportation, and food processing.

Additionally, the ripple effect of such an outbreak would be felt across the broader community. With a reduction in agricultural production, local businesses that depend on the purchasing power of farmers and agricultural workers could see reduced demand. Tax revenue from agricultural and commercial operations may decline, leading to potential cutbacks in public services. Furthermore, trade restrictions or bans on affected crops or livestock could limit access to both domestic and international markets, causing long-term economic setbacks. In the case of prolonged or severe outbreaks, the economic damage could extend to increased costs for disease containment, recovery, and infrastructure repair, putting a significant strain on local resources and potentially leading to economic stagnation in the region.

Built Environment

General Property

An animal, plant, or crop disease outbreak were to occur in the planning area, it could have a negative impact on property values, particularly in areas heavily reliant on agriculture. Agricultural land is a major component of property value in the planning area, and a disease outbreak affecting crops or livestock could reduce the productivity and profitability of farmland. As the economic potential of these properties diminishes due to the decreased ability to farm or raise livestock, the value of the land itself may decline.

Additionally, if the outbreak leads to long-term agricultural damage or a downturn in the local economy, it could deter investment in rural properties, further reducing demand and driving down values. Residential properties in rural areas, especially those near affected farms or agricultural lands, could also see a decline in value. Buyers might be hesitant to invest in areas where the agricultural sector is struggling, or where there are concerns about lingering disease risks.

Moreover, if the outbreak results in broader economic consequences, such as reduced employment opportunities in agriculture-related sectors, this could affect property markets in nearby towns and cities. Lower local incomes and increased uncertainty about economic recovery may lead to a broader decrease in property demand, affecting home

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prices across the region. Overall, the impact of such an outbreak could create a downward pressure on property values, particularly in rural and agricultural areas.

Critical Infrastructure

The impact on critical infrastructure would likely be indirect, but still significant in certain areas. Transportation networks, which are crucial for moving agricultural goods, livestock, and supplies, could face disruptions. Quarantines or restrictions on the movement of infected crops and animals may limit the use of roads and transportation routes typically used for shipping agricultural products. On the other hand, emergency response efforts could place additional pressure on these networks if there is a need for large-scale transport of equipment, emergency personnel, or materials to control the outbreak.

Water and waste management systems might also face increased demand, particularly in the disposal of large numbers of livestock, plants, and contaminated materials if culling or crop destruction is required. Increased water usage may be needed for decontaminating affected areas, which could stress local water systems. Similarly, waste management facilities would have to handle the influx of biological waste, potentially overwhelming current capacities.

Another critical area that could be impacted is healthcare infrastructure, especially if the outbreak involves a zoonotic disease capable of spreading to humans. In such cases, healthcare facilities may experience strain due to the increased need for medical care, quarantine facilities, and public health interventions. Local health services could require additional resources to manage both human and animal health concerns, including monitoring and containing the disease.

Lastly, communication systems would be vital in coordinating disease control efforts. Reliable communication infrastructure is essential for disseminating critical information about the outbreak, its spread, and containment measures. Disruptions in communication systems could hinder response efforts, while functional communication channels are necessary for coordinating actions between government agencies, farmers, and the general public. Overall, while critical infrastructure may not suffer direct physical damage, the logistical and resource management challenges associated with a disease outbreak could strain these systems.

Historical, Cultural, and Natural Environment

An animal, plant, or crop disease outbreak could have a variety of impacts on the historical, cultural, and natural environment in the planning area. While the direct effects

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on historical and cultural landmarks, such as the Grant Wood Art Colony, Anamosa State Penitentiary Museum, and the Lawrence Community Center, would likely be minimal, the outbreak could still have indirect consequences. A significant downturn in the local economy, particularly in the agricultural sector, might reduce the funding and resources available for the maintenance and preservation of these important sites. Additionally, the local tourism industry, which helps support cultural and historical sites like Wapsipinicon State Park's historic structures and the Hale Bridge, could suffer if visitors are deterred by the disease outbreak, further impacting revenues used for upkeep and cultural programming.

The natural environment of the planning area would likely see the most pronounced impact from an outbreak. A disease affecting crops or plant life could drastically alter the rural landscape, which is characterized by vast fields of corn and soybeans. The destruction of crops would not only affect the visual landscape but could also disrupt the local ecosystem. Similarly, the spread of invasive species or pests, such as the Emerald Ash Borer, could harm the county's forests and reduce biodiversity. This could impact sites such as Wapsipinicon State Park, Pictured Rocks County Park, and Indian Bluffs State Preserve, where tree loss and ecological imbalance might degrade natural habitats. This loss of plant and animal life could change the structure of natural ecosystems, affecting both wildlife and the balance of the local environment. In summary, while historical and cultural sites may not be directly threatened, the broader environmental and economic effects of a disease outbreak could have long-lasting impacts on the planning area's natural and cultural heritage.

Future Land Use and Development

The impact on future land use and development could be significant, particularly in areas tied to agriculture. The most immediate effect would likely be on agricultural land, as prolonged outbreaks or severe disease impacts could render farmland less productive, which may alter how land is used in the future. For instance, land that becomes unsuitable for crops due to recurring diseases might be repurposed for other uses, such as conservation areas, renewable energy projects like solar farms, or even residential development. Farmers facing financial losses might also sell or lease their land, leading to shifts in ownership and land use patterns.

In addition to changes in agricultural land use, development patterns could shift if the local economy is severely impacted by the outbreak. A struggling agricultural sector could slow down growth and reduce investments in new infrastructure or commercial development. Areas that rely heavily on agriculture may see less demand for housing or commercial spaces if agricultural jobs decline. On the other hand, a focus on biosecurity

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and disease prevention might encourage the development of new facilities or innovations in agricultural technology, such as controlled-environment agriculture (greenhouses) or disease-resistant crops, which could influence future land use.

Lastly, zoning regulations and land-use planning may be adjusted to mitigate the risk of future outbreaks. Local governments might introduce policies encouraging more sustainable farming practices, diversified land use, or conservation buffers between agricultural zones and residential areas to reduce the risk of spreading diseases. While the exact impact would depend on the severity and duration of the outbreak, an animal, plant, or crop disease disaster could lead to long-term changes in land use and development planning in the planning area.

3.4.2.8 Consequence Summary

Category	Narrative
Impact on the Public	• Health risk if zoonotic diseases spread to humans • Increased anxiety and stress due to economic uncertainty and public health concerns • Potential disruption to daily life if quarantine or movement restrictions are imposed
Impact on the Economic Condition of the Planning Area	• Loss of agricultural productivity, leading to financial strain on farmers and related industries • Job losses in the agricultural sector, which could ripple through local businesses and services • Reduced tax revenue from the agricultural sector, affecting public finances and services
Impact on the Historical, Cultural, and Natural Environment	• Indirect effects on the funding and maintenance of historical and cultural sites due to economic downturns • Damage to natural ecosystems and biodiversity, especially if invasive species or crop diseases spread • Alteration of the rural landscape, impacting the planning area’s visual and environmental identity
Impact on Built Environment, General Property, and Critical Infrastructure	• Decline in property values, particularly in agricultural areas, as land becomes less productive. • Increased strain on waste management systems due to the disposal of diseased animals or crops. • Limited impact on physical infrastructure, though logistical strains may arise in transportation and communication systems.
Impact on the Public Confidence in Government	• Loss of trust in local or state government if disease containment measures are seen as ineffective or slow.

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Category	Narrative
Impact on Responders	- Increased scrutiny on government responses, potentially leading to political and social unrest. - Health risks for responders involved in managing the outbreak, especially if zoonotic diseases are present. - Increased workload and pressure on local emergency services, healthcare, and agricultural authorities.
	- Redirection of resources toward outbreak management, potentially delaying other public services. - Disruption of normal government operations if widespread quarantines or public health emergencies are declared.
	- Food shortages and price hikes, impacting local food security and leading to broader economic challenges. - Trade restrictions on affected crops or livestock, potentially leading to long-term economic repercussions. - Environmental degradation if disease spreads to natural habitats, causing loss of biodiversity and altering ecosystems.

3.4.3 Communicable Disease Outbreak

Probability	Population Impact	Property Impact	Economy Impact	Overall Hazard Ranking
1.81	1.88	1.56	1.56	9.05

3.4.3.1 Description

The scale of a communicable disease outbreak or biological incident is described by the extent of the spread of the disease in the community. An outbreak can be classified as an endemic, an epidemic, or a pandemic depending on the prevalence of the disease locally and around the world.

- Endemic:** Something that is natural to or characteristic of a particular place, population, or climate. For example, threadworm infections are endemic in the tropics.
- Epidemic:** A disease that spreads rapidly through a demographic segment of the human population, such as everyone in a given geographic area, a similar population unit, or everyone of a certain age or sex, such as the children or women of a region.
- Pandemic:** Widespread epidemic with effects felt worldwide.

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Many potentially devastating diseases are spread through physical contact, ingestion, insects, and inhalation. Airborne diseases and those spread through physical contact pose higher risks to the community because they are difficult to control. Diseases such as influenza, Pertussis, Tuberculosis, and Meningitis are all spread through these methods and pose a threat to all communities. Health agencies closely monitor for diseases with the potential to cause an epidemic and seek to develop and promote immunizations.

A pandemic is a global disease outbreak. 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 could spread easily from 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.

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.

Pandemics are generally thought to be the result of a novel strain of viruses. Because of the process utilized to prepare vaccines, it is impossible to have vaccines pre-prepared to combat pandemics. Additionally, for novel viruses, identification of symptoms, mode of transmission, and testing/identification may require development, causing significant delays in response actions. A portion of the human and financial cost of a pandemic is related to the lag time to prepare a vaccine to prevent the future spread of the novel virus. In some cases, current vaccines may have limited activity against novel strains. Regardless of strong or weak local healthcare systems, disease outbreaks can strain and overwhelm community resources if there is a significant outbreak. Area vulnerable populations, young children, the elderly, under-resourced households, and those with underlying health conditions will be the hardest hit during any disease outbreak.

3.4.3.2 Location

The entire geographic planning area is susceptible to the spread of infectious disease, regardless of being mostly rural. Disease spread usually occurs in areas where vulnerable populations are, and also in areas where people live and work in close quarters.

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Depending on the specifics of the illness and its spread, these areas include shelters, senior homes, schools, places of business.

Applicable Jurisdictions	
Unincorporated Jones County	City of Oxford Junction
City of Anamosa	City of Wyoming
City of Martelle	Anamosa CSD
City of Monticello	Midland CSD
City of Morley	Monticello CSD
City of Olin	Olin CSD
City of Onslow	Sacred Heart School
	St. Patrick School
Applicable	Not Applicable

3.4.3.3 Magnitude/Severity

The magnitude of a disease outbreak or public health emergency will vary significantly depending on the aggressiveness of the virus in question and the ease of transmission. Pandemic influenza is more easily transmitted from person to person, but advances in medical technologies have significantly reduced the number of deaths caused by influenza over time.

Today, a much more significant percentage of the world’s population is clustered in cities, making them ideal breeding grounds for epidemics. Additionally, the explosive growth in air travel means a virus could spread around the globe within hours, quickly creating a pandemic. Under such conditions, there may be very little warning time. Most experts believe we will have just one to six months between the time that a dangerous new influenza strain is identified and the time that outbreaks begin to occur in the United States. Outbreaks are expected to coincide throughout much of the nation, preventing shifts in human and material resources that normally occur with other natural disasters. Unlike most other public health emergencies or community disasters, these and many other aspects make the influenza pandemic. Pandemics typically last for several months to 1-2 years.

As seen with the recent COVID-19 pandemic, which impacted the planning area, the rapid spread of the virus combined with the need for increased hospital and coroner resources, testing centers, first responders, and vaccination administration sites caused significant strain on medical systems and public health departments.

The Pandemic Intervals Framework (PIF) is a six-phased approach to defining the



progression of an influenza pandemic. This framework guides influenza pandemic planning and provides risk assessment, decision-making, and action recommendations. These intervals provide a common method to describe pandemic activity, which can inform public health actions. The duration of each pandemic interval might vary depending on the characteristics of the virus and the public health response.

The six-phase approach was designed to easily incorporate recommendations into existing national and local preparedness and response plans. Phases 1 through 3 correlates with preparedness in the pre-pandemic interval, including capacity development and response planning activities, while Phases 4 through 6 signal the need for response and mitigation efforts during the pandemic interval.

Pre-Pandemic Interval

Phase 1 - The natural state in which influenza viruses circulate continuously among animals (primarily birds) but do not impact humans.

Phase 2 - Animal influenza virus circulating among domesticated or wild animals is known to have caused human infection and is thus considered a potential pandemic threat. Phase 2 involves cases of animal influenza that have circulated among domesticated or wild animals and have caused specific cases of infection among humans.

Phase 3 - Animal or human-animal influenza virus has caused sporadic cases or small clusters of disease in people but has not resulted in human-to-human transmission sufficient to sustain community-level outbreaks. Limited human-to-human transmission may occur under some circumstances, for example, when there is close contact between an infected person and an unprotected caregiver. Limited transmission under these circumstances does not indicate that the virus has gained the level of transmissibility among humans necessary to cause a pandemic. Phase 3 represents the mutation of the animal influenza virus in humans so that it can be transmitted to other humans under certain circumstances (usually very close contact between individuals). At this point, small clusters of infection have occurred.

Pandemic Interval

Phase 4 - Characterized by verified human-to-human transmission of the virus able to cause “community-level outbreaks.” The ability to cause sustained disease outbreaks in a community marks a significant upward shift in the risk for a pandemic. Phase 4 involves community-wide outbreaks as the virus continues to mutate and become more easily transmitted between people (for example, transmission through the air)

Phase 5 - Characterized by verified human-to-human spread of the virus into at least two countries in one World Health Organization (WHO) region. While most countries will not be affected at this stage, the declaration of Phase 5 is a strong signal that a pandemic is

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imminent and that the time to finalize the organization, communication, and implementation of the planned mitigation measures is short. Phase 5 represents human-to-human transmission of the virus in at least two countries.

Phase 6 – The pandemic phase, is characterized by community-level outbreaks in at least one other country in a different WHO region in addition to the criteria defined in Phase 5. Designation of this phase will indicate that a global pandemic is underway. Phase 6 is the pandemic phase, characterized by community-level influenza outbreaks.

3.4.3.4 Past Occurrences

Since the early 1900s, five lethal pandemics have swept the globe:

- 1918-1919 Spanish Flu: The Spanish Flu was the most severe pandemic in recent history. The number of deaths was estimated to be 50-100 million worldwide and 675,000 in the United States. Its primary victims were mostly young, healthy adults. At one point, more than 10% of the American workforce was bedridden.
- 1957-1958 Asian Flu: The 1957 Asian Flu pandemic killed 1.1 million people worldwide, including about 70,000 people in the United States, mostly the elderly and chronically ill. Fortunately, the virus was quickly identified, and vaccine production began in May 1957.
- 1968-1969 H3N2 Hong Kong Flu: The 1968 Hong Kong Flu pandemic killed one million people worldwide and approximately 100,000 people in the United States. Again, the elderly were more severely affected. This pandemic peaked during school holidays in December, limiting student-related infections, which may have kept the number of infections down. Also, people infected by the Asian Flu ten years earlier may have gained some resistance to the new virus.
- 2009-2010 H1N1 Swine Flu: This influenza pandemic emerged from Mexico in early 2009 and was declared a public health emergency in the US on April 26. By June, approximately 18,000 cases had been reported in the US and the virus had spread to 74 countries. Most cases were fairly mild, with symptoms similar to the seasonal flu, but there were cases of severe disease requiring hospitalization and a number of deaths. The CDC estimates that 43-89 million people were infected worldwide, with an estimated 8,870 to 18,300 H1N1 related deaths, including 12,469 deaths in the United States.
- 2020-2024 COVID-19: The COVID-19 or novel corona virus was detected in December 2019 and was declared a pandemic in March of 2020. As of August 18, 2024, more than 775 million cases have been reported around the world with over 7 million deaths, including approximately 103 million cases and 1.2 million deaths in the US.

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- Over the past five years, the most commonly reported communicable diseases in the planning area, have included COVID-19, which dominated the county's public health landscape during the pandemic. Influenza (flu) has also been a significant seasonal concern, with public health campaigns focusing on flu vaccinations to mitigate outbreaks. Hepatitis C remains a notable issue, particularly among at-risk populations, with ongoing efforts toward prevention, testing, and treatment. Sexually transmitted infections (STIs), including chlamydia and syphilis, have seen an increase, reflecting state and national trends. Additionally, while less common, tuberculosis (TB) continues to be monitored and managed to prevent outbreaks. Jones County Public Health tracks these diseases and offers annual reports to guide health interventions and policy decisions.

3.4.3.4 Likelihood of Future Occurrence

Although it is impossible to predict the next disease outbreak, there is recent history that shows these outbreaks are not uncommon and are likely to reoccur. Based on the five pandemics that have affected the United States in roughly the last 100 years, a pandemic occurs on average roughly every 20 years.

For the current COVID-19 pandemic, due to the virus's ability to mutate and rapidly infect those who are not vaccinated, the pandemic may extend for several years, and booster vaccines may be necessary to prevent future outbreaks. In just the last couple of decades, the world has drastically increased points of transmission through global travel and trade to levels unseen in human history – this may have a drastic impact on the frequency of pandemics and the speed with which they spread in coming years.

3.4.3.6 Climate Change Considerations

According to the best available data, the changing climate is expected to exacerbate future pandemics. Climate change will influence vector-borne disease prevalence, although the direction of the effects (increased or decreased incidence) will be location- and disease-specific. The intensity and extent of certain diseases are projected to increase. Climate change threatens to increase the spread of infectious diseases because changing heat, rain, and humidity levels allow disease-carrying vectors and pathogens to come into closer contact with humans. If Iowa's climate becomes warmer, mosquito populations could swell even more than they already are, making the region more favorable for disease transmission. Warmer weather could also play a role in elevated seasonal rodent populations. Under-resourced households and populations, such as people with compromised health and those in lower socioeconomic status communities, are expected to bear a more significant burden as a result of their current reduced

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access to medical care and limited resources for adaptation strategies. Additional research is needed to determine the effects of climate change on the frequency and duration of epidemics and pandemics.

3.4.3.7 Vulnerability

People

Communicable disease outbreaks can have widespread and prolonged impacts on the population, with vulnerable and underserved populations facing heightened risks. The number of hospitalizations and deaths will depend on the severity and transmissibility of the disease, but historically, older adults, individuals with disabilities (13.1% of the population), and those with underlying medical conditions are at greater risk of severe illness. Additionally, underserved populations, such as the 2.9% of residents without health insurance and those living in poverty (11.4%), may experience delayed or limited access to medical care, increasing their likelihood of severe complications. Individuals working in low-wage jobs without paid leave, a demographic that includes many rural agricultural and service industry workers in Jones County, may also struggle to seek timely treatment or comply with quarantine measures without economic hardship.

The disproportionate impact on vulnerable groups extends beyond healthcare. Those in institutional settings, such as group quarters or assisted living facilities, face an increased risk of rapid disease spread and social isolation during outbreaks. Additionally, individuals without reliable transportation—1.4% of households—may struggle to access testing sites, vaccination clinics, or treatment facilities, exacerbating health inequities. School and childcare facility closures would particularly affect single-parent households and low-income families, who may lack the resources to manage extended disruptions. The long-term consequences of an outbreak could reinforce existing disparities, making it even more difficult for underserved communities to recover, access consistent healthcare, and regain economic stability.

Economy

Widespread communicable disease outbreaks could have devastating impacts on the economy. The economic impacts fall under two categories - economic losses due to the disease and economic losses to fight the disease. Economic impacts due to disease include those costs associated with lost work and business interruption. Depending on the disease and the type and rate of spread, businesses could see the loss of consumer base as people self-isolate or avoid travel altogether. This could last for a protracted amount of time, compounding economic loss. Economic costs are also

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associated with incident response. Two of the most significant cost areas are public information efforts and mass prophylaxis.

In a typical year, lost productivity due to illness costs US employers an estimated \$530 billion. That figure would likely be considerably high during a pandemic and could trigger a recession or even a depression. According to an October 2020 report by The Journal Of American Medical Association (JAMA) Network, the estimated cumulative financial costs of the COVID-19 pandemic related to the COVID-19 economic recession and compromised health (premature death, mental health, long-term health impairment) in the US population was almost \$16 trillion.

Built Environment

General Property

Communicable diseases would not have specific impacts on infrastructure or the built environment. Should infrastructure require human intervention to fulfill vital functions, these functions could be impaired by absenteeism, sick days and isolation, quarantine, and disease prophylaxis measures. As concerns about contamination increase, property may be quarantined or destroyed as a precaution against spreading illness. Additionally, Traditional sheltering facilities, including shelters for persons experiencing homelessness or facilities that stand up to support displaced persons due to an evacuation or other reasons due to a simultaneous disaster occurring, cannot be done in a congregate setting. This requires additional planning considerations or the use of facilities that allow for non-congregate shelter settings. This may require approval of a request to FEMA for non-congregate sheltering and may have an increased cost (such as the use of individual hotel rooms) as opposed to traditional congregate sheltering facilities.

Critical Infrastructure

The impacts of a communicable disease on critical infrastructure would center on service disruption due to staff missing work, shortages in essential resources and supplies to perform services as seen with personal protective equipment (PPE) during the COVID-19 pandemic within the Health and Medical Sector. While automated systems and services that allow for physical distancing of staff from other persons may fare better through a communicable disease incidents due to the globalization of supply chains, services, and interdependency of most communities on robust staffing, it is likely all critical infrastructure sectors would be affected in various ways.

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Historical, Cultural, and Natural Environment

While direct impacts on historical and cultural landmarks such as the Grant Wood Art Gallery in Stone City, the Anamosa State Penitentiary Museum, and the Monticello Heritage and Cultural Center would likely be minimal, an outbreak could lead to reduced tourism and economic losses that indirectly affect the maintenance and operation of these sites. The Edinburgh Pioneer Village, a historical site that preserves early settler history, may see fewer visitors, impacting educational programs and preservation efforts.

In addition, public health restrictions, such as event cancellations or limitations on gatherings, could significantly impact community events and activities hosted at locations like the Jones County Fairgrounds in Monticello, the Lawrence Community Center in Anamosa, and the Veterans Memorial Hall, disrupting traditional cultural and social engagements. Schools and community libraries, including the Wyoming Public Library and Cascade Public Library, could experience interruptions in educational programming, limiting public access to local history and heritage resources.

The natural environment could also be affected if local parks and outdoor spaces, including Wapsipinicon State Park, Pictured Rocks County Park, Indian Bluffs State Preserve, and the Hale Wildlife Area, experience reduced maintenance due to funding constraints or limited personnel availability during an outbreak. Trail systems and conservation areas may see reduced visitor activity, affecting local environmental education programs and conservation funding. In summary, while the physical integrity of historical and cultural sites may remain intact, the economic and social consequences of a communicable disease outbreak could have lasting effects on the planning area's historical, cultural, and natural environment.

Future Land Use and Development

Population growth and development contribute to pandemic exposure. Future development in and around the planning area has the potential to change how infectious diseases spread through the community and impact human health in both the short and long term. New development may increase the number of people and facilities exposed to public health hazards and greater population concentrations (often found in special needs facilities and businesses) put more people at risk. During a disease outbreak, those in the immediate isolation area would have little to no warning. In contrast, the population further away in the dispersion path may have time to prepare and mitigate against disease depending on the hazard, its transmission, and public notification.

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3.4.3.8 Consequence Summary

The following table provides a summary based on possible impacts and consequences of this hazard. Please note, the impacts could change based on the parameters of an actual incident.

Category	Narrative
Impact on the Public	• Sickness, fatalities • Vulnerable populations are especially susceptible to illness/fatalities depending on the communicable disease • Mental health impacts both during and after
Impact on the Economic Condition of the Planning Area	• Loss in quality of services from staffing shortages (sickness or fatalities of staff) • Secondary impacts from reduction in private sector business staffing shortfalls, supply chain disruptions, and consumer shift in economic engagement
Impact on the Historical, Cultural, and Natural Environment	• Zoonotic diseases may be spread between animals and humans • Animal carcass disposal and/or culling of entire herds may be needed • Potential impacts from pesticide use or other response actions
Impact on Built Environment, General Property, and Critical Infrastructure	• No impacts to critical infrastructure assets directly (physically), but ability to maintain services due to cascading impacts from personnel shortages
Impact on the Public Confidence in Government	• The public will expect thoughtful and timely resolutions to issues
Impact on Responders	• Potential staffing challenges due to ill responders • Exceeding surge capacity in medical facilities and ambulatory resources for patients
Impact on continuity of operations, including continued delivery of government services	• Potential continuity of government challenges due to sick workers; issues due to potential isolation, quarantine, and social distancing
Cascading hazards	• Critical infrastructure failure and supply chain disruption • Social unrest

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3.4.4 Critical Infrastructure Failure

Probability	Population Impact	Property Impact	Economy Impact	Overall Hazard Ranking
1.56	1.88	1.81	1.81	8.58

3.4.4.1 Description

Disruption of critical infrastructure sector services provide could result from many of the natural, technological, and manmade hazards described in this plan. Failure of components of the critical infrastructure sectors in the planning area can seriously impact every facet of daily life, not limited to but including public health, functioning of government and communities, and the economy. Disruption can result from many of the hazards described in this plan. In addition to a secondary or cascading impact from another primary hazard, critical infrastructure assets can fail due to faulty equipment, lack of maintenance, degradation over time, or accidents such as damage to buried lines or pipes during excavation. Examples of critical infrastructure systems and networks that when disrupted or fail, are more commonly felt directly by the public include electric power, transportation routes, natural gas and oil pipelines, water and sewer systems, storage networks, and Internet/telecommunications systems.

Most critical infrastructure assets are owned or operated by the private sector, and the provision of goods and services is predominantly led by the private sector. When interruptions, fluctuations, and limited to no-notice challenges arise beyond the adaptability of supply chain stakeholders, supply chain disruptions may occur.

3.4.4.2 Location

The entire planning area of the planning area, is at risk for various types of critical infrastructure sector failures, which can result from primary factors such as malfunction, degradation, or accidental or intentional damage, as well as secondary impacts from other hazard events, including severe storms, flooding, or cyberattacks. Key infrastructure systems—such as energy, water, transportation, telecommunications, and healthcare—are interconnected, meaning that a failure in one sector can trigger cascading effects in others, compounding the impact of the initial failure.

For example, a road or bridge closure caused by a severe storm or flooding in the Wapsipinicon River Valley could isolate parts of the county and impede emergency response services, while a power outage could affect essential services like Jones Regional Medical Center or water treatment facilities, putting public health and safety at

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risk. These kinds of infrastructure failures could result in significant disruptions to daily life, especially if secondary hazards further complicate response efforts.

Moreover, many infrastructure sectors are vulnerable to cascading impacts. For instance, flooding could damage roads and bridges while simultaneously knocking down power lines, leading to a domino effect across sectors, affecting energy supplies, emergency response, and public safety. This interconnectedness emphasizes the need for resilience planning to address both primary failures and secondary impacts across all critical infrastructure sectors.

The planning area must prepare for the potential of widespread infrastructure failures by implementing resilience plans and contingency measures to mitigate the risks posed by these failures and ensure continued service in the event of a disaster.

Applicable Jurisdictions	
Unincorporated Jones County	City of Oxford Junction
City of Anamosa	City of Wyoming
City of Martelle	Anamosa CSD
City of Monticello	Midland CSD
City of Morley	Monticello CSD
City of Olin	Olin CSD
City of Onslow	Sacred Heart School
	St. Patrick School

Applicable Not Applicable

3.4.4.3 Magnitude/Severity

Critical infrastructure failure hazard are measured by the scale of impact across various sectors, such as energy, water systems, transportation networks, telecommunications, healthcare, and emergency services. The severity of an infrastructure failure depends on the number of people and services affected, the duration of the disruption, and any secondary impacts that arise from the failure.

For example, a failure in the energy supply would disrupt power to homes, businesses, healthcare facilities, and essential services across the county. The severity would increase if the outage is prolonged, especially in extreme weather conditions that could threaten vulnerable populations. A failure in water and wastewater systems would pose a public health risk, leading to water contamination or limited access to clean water, further straining healthcare facilities and potentially causing widespread illness.

Similarly, transportation infrastructure failures—such as road or bridge closures due to flooding or structural damage—could impede emergency response, isolate communities, and delay the movement of goods, affecting both public safety and the economy. Failures in telecommunications could interrupt critical communication between emergency responders and the public, compounding the effects of other hazards.

In more severe cases, such as the failure of healthcare infrastructure like hospitals or emergency services, the inability to provide timely medical care could result in significant health impacts, including increased mortality during emergencies. The magnitude of any infrastructure failure is also influenced by its cascading effects—where one failure triggers additional disruptions across other sectors, amplifying the overall impact on the community.

Thus, infrastructure failure in the planning area is assessed based on how widespread the disruption is, how long it lasts, and whether it leads to more severe consequences, such as secondary hazards or critical service outages.

3.4.4.4 Past Occurrences

Significant power or utility outages are listed below. In some cases, major outages that occurred outside, but near to, the planning area have been included to show the range of possible outcomes.

- Iowa Derecho (2020): A powerful windstorm knocked out power to over 1 million Iowans, damaged power lines, telecommunications, and caused significant delays in emergency services and public utilities across the planning area and the region.
- Wapsipinicon River Flooding (2008): Heavy rainfall caused severe flooding in the planning area, damaging roads, bridges, power lines, and water infrastructure, disrupting transportation and isolating areas.
- Cedar Rapids Flood (2008): Severe flooding damaged energy, transportation, and water treatment infrastructure, displacing residents and leaving many without essential services for extended periods.
- Northeast Blackout (2003): A software failure in the energy grid led to power outages for 50 million people, including parts of the Midwest, causing transportation delays, business closures, and reliance on backup power for healthcare.
- Missouri River Flooding (2019): Widespread spring flooding caused significant damage to roads, bridges, water systems, and farmland, leading to prolonged power outages and service disruptions in Iowa.

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- Texas Power Grid Failure (2021): Extreme cold overwhelmed the Texas power grid, causing widespread outages, water system failures, and emergency service delays, with severe impacts on healthcare and public safety.

These examples show how critical infrastructure failures can have far-reaching impacts, disrupting essential services, public safety, and the local economy. In many cases, failures were exacerbated by natural disasters, highlighting the need for resilience planning and infrastructure upgrades to reduce vulnerability.

3.4.4.5 Likelihood of Future Occurrence

The likelihood of future critical infrastructure failures in the planning area, is considered moderate to high based on local, regional, and state trends. the planning area is vulnerable to natural hazards such as severe storms, flooding, and tornadoes, all of which have historically caused significant damage to infrastructure, including power lines, roads, and water systems. The 2020 derecho, which caused widespread power outages and damage across Iowa, and the repeated flooding events along the Wapsipinicon River, highlight the county's susceptibility to weather-related disruptions.

Regionally, Iowa's aging infrastructure, particularly in rural areas like the planning area, increases the likelihood of future failures. Bridges, roads, and water treatment facilities are at risk due to degradation over time, combined with limited funding for upgrades. Additionally, the growing reliance on digital systems and interconnected infrastructure makes the planning area vulnerable to cyberattacks, which could disrupt essential services like power and communication.

Given these factors, the planning area's critical infrastructure faces ongoing risks from both natural hazards and infrastructure degradation. The increasing frequency of severe weather events, combined with aging infrastructure, suggests that future failures are likely unless significant upgrades and mitigation efforts are undertaken.

3.4.4.6 Climate Change Considerations

Climate change considerations for critical infrastructure failure hazards in the planning area, Iowa, are limited because these failures are not inherently tied to natural processes. However, climate change can still play an indirect role in increasing the likelihood of infrastructure failures, particularly through the increasing frequency and intensity of extreme weather events. For example, more frequent and severe storms, heavy rainfall, and flooding—all of which are projected to become more common due to climate

change—can exacerbate risks to infrastructure systems such as power lines, water treatment facilities, roads, and bridges.

Increased temperatures and shifting weather patterns may also strain infrastructure over time, particularly in rural areas where funding for infrastructure upgrades is already limited. Aging infrastructure, such as roads and bridges, may be more vulnerable to damage from extreme heat or freeze-thaw cycles, both of which are influenced by changing climate conditions.

While critical infrastructure failures themselves are not caused by climate change, the secondary impacts of climate-driven weather events could make such failures more frequent and severe. It is important for infrastructure planning in the planning area to account for the potential increase in severe weather events due to climate change when designing future infrastructure projects or implementing mitigation strategies.

3.4.4.7 Vulnerability

People

The impact on the population would be significant, with vulnerable and underserved populations facing the most severe consequences from disruptions to essential services. The immediate loss of electricity, water, or telecommunications would disproportionately impact low-income households, older adults, and individuals with disabilities (13.1% of the population), who may have fewer resources to adapt to outages. Households without reliable transportation (1.4%) could struggle to access alternative water sources, medical care, or essential supplies during prolonged service interruptions. A failure in water systems would create public health risks, with underserved communities, particularly those in rural areas with private wells or aging infrastructure, facing greater challenges in maintaining sanitation and access to safe drinking water.

The breakdown of infrastructure would also exacerbate health disparities, as emergency services and healthcare systems struggle to function effectively. People reliant on electrically powered medical devices, such as oxygen concentrators or mobility aids, would be especially at risk. Without functioning communication systems, residents with limited English proficiency (0.4%) or cognitive impairments may have greater difficulty receiving timely updates or emergency instructions. Public transportation disruptions would further impact low-income workers, single-parent households, and those dependent on transit for medical care or employment, increasing financial and social stress.

Long-term infrastructure failures would widen existing economic disparities, particularly in the agricultural and small business sectors, which rely on stable energy and communication systems to operate. Residents already experiencing financial hardship (11.4% in poverty) would face compounded challenges due to job losses, increased living costs, and barriers to recovery assistance. Without equitable access to emergency aid and infrastructure restoration, underserved populations would struggle to regain stability, reinforcing systemic inequities within the county.

Economy

The economic impact would be significant, particularly affecting key sectors like agriculture. As the primary economic driver in the county, agriculture would face severe disruptions due to failures in energy, water, transportation, and communication systems. Farms would struggle to operate machinery needed for planting, harvesting, and maintaining livestock without power. Additionally, irrigation systems could be compromised, leading to crop losses. Disruptions in transportation could prevent timely shipment of agricultural products, leading to further financial losses.

Local businesses would also experience hardship, especially those reliant on steady access to power and communication networks. Retailers, restaurants, and other service providers would see reduced revenue during outages, and smaller businesses with fewer financial reserves might face closure if the disruptions were prolonged. This would have a cascading effect on the local economy, reducing consumer spending and compounding financial difficulties for businesses and residents alike.

Public services, including healthcare and emergency response systems, would face operational challenges, increasing costs for the county. The need for emergency repairs, recovery efforts, and infrastructure upgrades could divert resources from other important community projects and services. This would further strain the local government, as they work to address the immediate needs of residents while managing long-term recovery from the failure.

Built Environment

General Property

If a critical infrastructure failure were to occur in the planning area, it could have a negative impact on property values, particularly in areas most affected by the disruption. Prolonged failures in essential services like electricity, water, and communication systems could make certain areas less desirable for both residential and commercial purposes.

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Potential buyers or investors may perceive these areas as higher risk if they are prone to outages or infrastructure issues, leading to a decline in demand for properties in those locations.

In rural and agricultural areas, property values could drop if farms and businesses struggle to recover from infrastructure failures. Disruptions to the agricultural economy, which is a major part of the county's livelihood, would affect both the productivity and profitability of farmland. If critical infrastructure is not adequately restored or upgraded, the long-term viability of these properties could be called into question, reducing their market value.

In urban areas such as Anamosa and Monticello, prolonged infrastructure failures could also affect commercial and residential property values. Businesses that rely on steady power and communication services may face operational challenges, leading to reduced economic activity, which in turn could depress local real estate markets. Moreover, residential buyers might be hesitant to move into areas that have experienced repeated or severe infrastructure failures, especially if these disruptions affect daily living conditions.

Overall, while the direct impact on property values would depend on the severity and duration of the infrastructure failure, prolonged or repeated disruptions could create long-term economic challenges that would be reflected in reduced property values across both urban and rural areas of the planning area.

Critical Infrastructure

If a critical infrastructure failure were to occur in the planning area, several key sectors would be affected simultaneously, each impacting the other. Energy systems, including the electrical grid, would be one of the first and most critical sectors to experience disruption. A prolonged power outage would immediately affect hospitals, water treatment facilities, and emergency response services. Without power, facilities like Jones Regional Medical Center could struggle to provide critical care, relying on backup generators, which may not be sufficient for long-term outages. Additionally, water treatment plants and wastewater systems could fail, leading to contamination risks and disruptions in water supply for both residential and agricultural use.

The transportation infrastructure in the planning area, including roads and bridges, could also be severely impacted. If roads or bridges were damaged or compromised, especially those crossing the Wapsipinicon River and other key routes, access to essential services and movement of emergency responders would be limited. This would delay

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not only emergency responses but also the transportation of goods and agricultural products, further compounding the economic impact.

In addition, telecommunications systems would likely experience significant disruptions, limiting the ability of residents and officials to communicate during the crisis. This breakdown in communication infrastructure would hinder the coordination of emergency responses and slow the dissemination of important information to the public. Critical services such as 911 calls, emergency dispatch, and public warnings could be delayed or go unheeded, increasing the risks to public safety.

The interconnected nature of these infrastructure systems means that the failure of one could lead to cascading failures in others, intensifying the impact on the county. For instance, without power, communication towers and transportation systems could fail, further isolating affected areas and complicating recovery efforts. This scenario emphasizes the vulnerability of the planning area's infrastructure to multiple, simultaneous failures, with widespread consequences for public safety and economic stability.

Historical, Cultural, and Natural Environment

This hazard could significantly impact the historical, cultural, and natural environment in the planning area. Disruptions in energy and communication systems would impede efforts to preserve historical and cultural assets. Without power, environmental controls that maintain conditions for the preservation of artifacts and important records at locations such as the Anamosa State Penitentiary Museum, Monticello Heritage and Cultural Center, and Edinburgh Pioneer Village would be compromised, leading to potential deterioration of exhibits and archival materials. Prolonged infrastructure failure could also limit public access to sites such as the Grant Wood Art Gallery in Stone City or the Wyoming Historical Museum, reducing community engagement and tourism, which are vital for maintaining the county's cultural identity.

The natural environment in the planning area would be particularly vulnerable. Disruptions in water treatment facilities and waste management systems could lead to environmental contamination, especially in areas surrounding rivers and water bodies like the Wapsipinicon River and Whitewater Creek, endangering aquatic life and local ecosystems. Parks and conservation areas, including Pictured Rocks County Park, Indian Bluffs State Preserve, and Hale Wildlife Area, could suffer if infrastructure failures lead to pollution, water shortages, or disruptions in land management activities. A breakdown in transportation infrastructure, such as damaged roads or bridges, could hinder

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maintenance efforts for these sites, delaying conservation work and restricting public access.

Additionally, prolonged failures in public safety and emergency services infrastructure could jeopardize cultural institutions that rely on stable infrastructure to protect their collections. Locations such as the Jones County Courthouse, which holds historical records, and Veterans Memorial Hall, which preserves local military history, could face risks if fire suppression or climate control systems fail. In rural areas, loss of power and transportation access could impact the ability to manage and maintain the county's historic farmsteads and agricultural heritage sites, which are integral to the region's identity.

Future Land Use and Development

The implications for future land use and development due to critical infrastructure failure(s) could be substantial. In rural areas, particularly those reliant on agriculture, infrastructure failures affecting water, energy, or transportation systems could reduce agricultural productivity. Farmers who face frequent disruptions may choose to sell or repurpose their land, leading to a shift away from agricultural use toward other purposes like residential or commercial development. This change could prompt local governments to reconsider zoning regulations in rural areas, as once-productive farmland may become less viable for traditional agricultural activities due to unreliable infrastructure.

In urban areas like Anamosa or Monticello, future development could be impacted by investor and developer hesitancy if these regions experience repeated infrastructure issues. The perception of unreliability in power, water, or transportation systems could slow down commercial and residential projects, as developers may seek more stable environments for growth. Additionally, infrastructure repair and upgrading efforts would likely take precedence over new developments, which could delay planned projects. Local governments may also need to adjust building codes and land use policies to prioritize resilient infrastructure, ensuring that future developments are better equipped to handle similar failures in the future.

3.4.4.8 Consequence Summary

A critical infrastructure failure in the planning area, could have widespread and severe consequences. Disruptions to essential systems such as energy, water, transportation, telecommunications, and emergency services would affect daily life, public health, and safety. Residents might lose access to basic utilities like electricity and clean water, while

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communication breakdowns could hinder emergency response efforts. Transportation failures could isolate communities and delay the delivery of goods and services. Prolonged outages could impact economic productivity, particularly in agriculture and local businesses, and place financial strain on public services. Additionally, healthcare systems would be compromised, especially for vulnerable populations relying on medical facilities. Overall, the failure of any critical infrastructure would result in significant challenges for the community, requiring extensive recovery efforts and potentially leading to long-term economic and social impacts.

Category	Narrative
Impact on the Public	• Loss of access to basic utilities like electricity, water, and communication services. • Public health risks due to potential water contamination and inability to access medical care. • Increased anxiety and disruption in daily life, particularly for vulnerable populations.
Impact on the Economic Condition of the Planning Area	• Disruptions to agriculture and local businesses, leading to financial losses and reduced productivity. • Economic strain from delayed shipments, loss of goods, and increased costs of repairs and recovery. • Potential job losses in key sectors like agriculture and retail.
Impact on the Historical, Cultural, and Natural Environment	• Potential damage to historical and cultural preservation efforts due to power and environmental control failures. • Natural environment risks, including water contamination and disruption of ecosystems from infrastructure breakdowns. • Reduced access to cultural and natural sites, negatively affecting tourism and local engagement.
Impact on Built Environment, General Property, and Critical Infrastructure	• Decline in property values due to repeated failures and the perception of risk in areas prone to infrastructure disruptions. • Damage to transportation, power, and water systems, requiring costly repairs and upgrades.
Impact on the Public Confidence in Government	• Erosion of trust in local government if the response is seen as inadequate or slow. • Increased public pressure for accountability and infrastructure improvement.
Impact on Responders	• Overwhelmed emergency services due to high demand and limited communication capabilities. • Increased physical and mental strain on responders managing extended outages and public health issues.

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Category	Narrative
Impact on continuity of operations, including continued delivery of government services	• Disruption of government operations, including schools, healthcare, and emergency response systems. • Potential delays in recovery efforts due to communication and transportation failures.
Cascading hazards	• Secondary hazards such as fires, flooding, or contamination resulting from energy or water system failures. • Extended infrastructure failures leading to long-term economic and social consequences, including increased public health risks and environmental degradation.

3.4.5 Cyber Incident

Probability	Population Impact	Property Impact	Economy Impact	Overall Hazard Ranking
1.75	1.56	1.31	1.38	7.44

3.4.5.1 Description

The U.S. Department of Homeland Security’s National Cyber Incident Response Plan defines cyber incidents as:

Types of Cyber Incident
Cyber Incident – An event occurring on or conducted through a computer network that actually or imminently jeopardizes the confidentiality, integrity, or availability of computers, information or communications systems or networks, physical or virtual infrastructure controlled by computers or information systems, or information resident thereon.
Significant Cyber Incident – A cyber incident that is (or group of related cyber incidents that together are) likely to result in demonstrable harm to the national security interests, foreign relations, or economy of the United States or to the public confidence, civil liberties, or public health and safety of the American people.

While cyber incidents are not always intentional, this hazard profile focuses on incidents caused by malicious actors. This can include both cyber criminals that are looking to steal data for financial gain, as well as cyber terrorists that are seeking to destroy or undermine systems for political or organizational reasons. For purposes of this profile, both are collectively referred to as cyber attacks.

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Cyber attacks use malicious code to alter computer operations or data. The vulnerability of computer systems to attacks is a growing concern as people and institutions become more dependent upon networked technologies. The Federal Bureau of Investigation (FBI) reports that, "cyber intrusions are becoming more commonplace, more dangerous, and more sophisticated," with implications for private- and public-sector networks. Cyber threats can take many forms, including:

- Distributed Denial of Service (DDoS) Attack: an attack that overwhelms a server, website, or network with a flood of internet traffic, rendering it unavailable to users. This attack aims to disrupt normal operations by overloading the target with excessive requests, causing the system to crash or become unresponsive.
- Data Breach: when sensitive, confidential, or protected information is accessed, stolen, or exposed by an unauthorized party. This can include personal data, financial information, or intellectual property, often leading to identity theft or financial loss.
- Phishing Attacks: type of social engineering attack where attackers send fraudulent messages (usually via email) that appear to come from trusted sources. The goal is to trick individuals into revealing sensitive information, such as passwords, credit card numbers, or personal details.
- Malware Attacks: malicious software designed to damage, exploit, or gain unauthorized access to systems. This includes viruses, worms, trojans, and spyware. Malware can disrupt operations, steal data, or allow attackers to control infected systems.
- Ransomware: type of malware that encrypts a victim's data, rendering it inaccessible until a ransom is paid to the attacker. It targets individuals, businesses, or organizations, often paralyzing operations until the ransom demand is met.
- Critical Infrastructure/SCADA System Attack: targets the digital control systems that manage critical infrastructure, such as power grids, water treatment facilities, and transportation networks. These attacks can disrupt essential services and cause significant damage to public safety and the economy.

Two related terms that can be used to further the above attacks:

- Unpatched Software Exploitation: when attackers take advantage of vulnerabilities in software that have not been updated or "patched" with security fixes. These flaws allow hackers to gain unauthorized access to systems, steal data, or install malware. Keeping software up to date is crucial because patches typically address known vulnerabilities.
- Advanced Persistent Threats: long-term, targeted attacks where an attacker gains access to a network and remains undetected for an extended period. APTs

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typically aim to steal sensitive data rather than cause immediate damage. They are often carried out by well-funded and highly skilled actors, such as state-sponsored groups, and involve a series of sophisticated techniques to maintain access while avoiding detection.

3.4.5.2 Location

Cyber attacks can occur in any location, including the planning area, regardless of geography, demographics, or security posture. Malicious attackers are able to breach systems remotely from anywhere in the world, targeting both local systems and cloud-based services. Cyber incidents can affect a single location or span multiple geographic areas, and disruptions that occur far outside of the county, state, or even the nation can still have far-reaching effects on people, businesses, and institutions within the planning area. For example, a breach of cloud services located out of state could impact local government operations, healthcare facilities, schools, and private businesses that rely on those services. The geographic extent of a cyber attack’s impact is substantial, as local systems are interconnected with global networks, making every system in the county potentially vulnerable to a range of cyber threats.

Applicable Jurisdictions	
Unincorporated Jones County	City of Oxford Junction
City of Anamosa	City of Wyoming
City of Martelle	Anamosa CSD
City of Monticello	Midland CSD
City of Morley	Monticello CSD
City of Olin	Olin CSD
City of Onslow	Sacred Heart School
	St. Patrick School
Applicable	Not Applicable

3.4.5.3 Magnitude/Severity

The magnitude and severity of a cyber incident hazard in the planning area, would be measured based on several key factors that assess the overall impact and scope of the incident. The severity is typically determined by evaluating the following elements:

Element	Measurement
Scope of the Attack	The number of systems, networks, or services affected plays a significant role in determining the magnitude. A targeted attack on one system would be considered less severe than an attack that impacts multiple critical systems such as

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Element	Measurement
	government operations, healthcare facilities, or public utilities. The geographic reach of the attack, whether it affects only local systems or has national or international connections, also influences the overall severity.
Duration of the Incident	The length of time the attack disrupts services is a critical factor. Short-term disruptions may cause inconvenience but are typically rated lower in severity. In contrast, long-term or persistent attacks, especially those that involve data breaches or ransomware, which may take days, weeks, or even longer to resolve, are considered more severe.
Type of Attack	The nature of the cyber incident matters greatly. For example, a Distributed Denial of Service (DDoS) attack might only cause temporary unavailability, whereas a ransomware attack that locks down critical infrastructure systems would be classified as more severe due to its direct impact on operational capacity and data integrity. Advanced Persistent Threats (APTs), which maintain long-term unauthorized access to sensitive data, would also be considered highly severe.
Impact on Critical Services	The severity is measured by the disruption to essential services such as healthcare, law enforcement, emergency response, water treatment, and energy supplies. Cyber incidents affecting critical infrastructure like SCADA systems (which control industrial operations such as water treatment or electrical grids) are considered high-severity events due to their potential to harm public safety and disrupt daily life.
Economic and Social Consequences	Economic losses and the broader social disruption caused by the cyber incident also contribute to its severity. For example, if businesses are unable to operate for extended periods or personal data is stolen, leading to identity theft or financial fraud, the overall severity of the incident increases. Social consequences, such as public distrust or panic, can further elevate the impact of a cyber incident.
Recovery and Mitigation Efforts	The difficulty and cost associated with recovering from the attack play a role in determining its magnitude. Incidents requiring extensive recovery efforts, including system repairs, data recovery, and long-term security upgrades, are deemed more severe.

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3.4.5.4 Past Occurrences

Here are some past occurrences of cyber incidents across the U.S. that have had significant impacts:

- Colonial Pipeline Ransomware Attack (2021): The Colonial Pipeline, which supplies nearly half of the East Coast's fuel, was targeted by a ransomware attack, forcing a temporary shutdown. Approximately 100 gigabytes of data were stolen, and the company paid a \$4.4 million ransom. The attack led to fuel shortages and price spikes across the Eastern U.S.
- Equifax Data Breach (2017): Equifax, a major credit reporting agency, suffered a breach that exposed the personal information of 147 million Americans, including Social Security numbers and financial data. The breach was caused by a failure to patch a known vulnerability in their system.
- Target Data Breach (2013): The Target Corporation experienced a massive data breach during the holiday shopping season, compromising 40 million credit and debit card records and personal information of 70 million customers. Attackers infiltrated Target's network by gaining access through a third-party vendor.
- U.S. Office of Personnel Management (OPM) Breach (2015): Hackers breached the OPM, stealing sensitive data from 22.1 million federal employees. The stolen information included Social Security numbers, fingerprint data, and detailed background checks, creating significant national security concerns.
- WannaCry Ransomware Attack (2017): The WannaCry ransomware spread globally, affecting over 200,000 systems in more than 150 countries. The attack exploited a vulnerability in Windows systems, causing significant disruption to healthcare services, businesses, and government agencies.

These examples highlight the range and severity of cyber incidents, affecting both private companies and government entities, with widespread impacts on data security, public safety, and the economy.

3.4.5.5 Likelihood of Future Occurrence

The likelihood of future cyber incidents in the planning area, is considered moderate to high based on state, regional, and national trends. Like many rural areas, the planning area's reliance on digital systems for essential services such as healthcare, utilities, and local government operations increases its vulnerability. Iowa has experienced significant growth in cyber threats over recent years, particularly as more public and private sectors adopt digital platforms, cloud services, and interconnected infrastructure. The Iowa Department of Homeland Security and Emergency Management has emphasized the

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growing risk of cyber incidents, noting the rise in ransomware, phishing attacks, and threats targeting critical infrastructure statewide.

Regionally, Midwestern states have faced increasing cyberattacks targeting agricultural systems, local governments, and healthcare facilities, sectors that are heavily dependent on digital networks. As the planning area relies on agriculture and small businesses, it shares the regional vulnerabilities seen in surrounding counties and states. Additionally, local governments and smaller organizations often have fewer resources to dedicate to robust cybersecurity measures, increasing the risk of successful cyber incidents.

Considering the nationwide rise in cyberattacks, including those on rural infrastructure and services, the probability of the planning area facing future cyber incidents is high. The interconnectivity of systems and growing sophistication of cybercriminals mean that even small or rural jurisdictions like the planning area are not immune to these threats. Proper mitigation and security measures are crucial to addressing this rising risk.

3.4.5.6 Climate Change Considerations

There are generally no direct climate change considerations associated with a cyber incident hazard, as it is not a natural hazard. Cyber incidents are typically the result of malicious human activities, such as hacking, malware, or ransomware attacks, rather than environmental factors. However, there could be indirect links between climate change and cyber risks, as the increased frequency of extreme weather events (such as storms, floods, or wildfires) could create situations where emergency responses are more dependent on digital infrastructure. If cyberattacks target critical systems during these vulnerable periods, the consequences could be exacerbated.

For instance, during natural disasters, local governments and emergency services rely heavily on digital communication systems and data management tools. A cyberattack during a severe weather event, which is increasingly likely due to climate change, could compound the challenges in responding to the disaster. Additionally, as climate change drives greater adoption of renewable energy technologies and smart grids, these systems may become new targets for cyber threats, making their cybersecurity more critical in the future.

While climate change itself does not directly influence cyber threats, the increased reliance on technology and infrastructure to manage climate impacts heightens the importance of cybersecurity in a changing climate.

3.4.5.7 Vulnerability

People

The impact on vulnerable and underserved populations could be particularly severe due to the county's reliance on digital infrastructure for essential services. Disruptions to healthcare, emergency response, and utilities caused by a cyber incident could leave low-income residents, older adults, and individuals with disabilities (13.1% of the population) without access to critical services. If Jones Regional Medical Center or emergency services were compromised, individuals requiring urgent medical care, especially those with chronic conditions or medical dependencies, could face life-threatening delays. Residents with limited digital literacy or unreliable internet access, particularly in rural areas, may struggle to access alternative resources or receive timely emergency notifications.

A cyber incident targeting local government systems could disproportionately affect underserved communities by limiting access to essential services, such as public benefits programs, tax records, and municipal support services. The exposure of sensitive information in a data breach could put at-risk residents—such as those without financial security or digital protection—at higher risk for identity theft and fraud. Households in poverty (11.4%) and older adults with fixed incomes may lack the resources to recover from financial fraud, while those with limited English proficiency (0.4%) may have difficulty understanding how to mitigate the risks of data exposure.

Economic disruptions from a cyber incident could worsen financial insecurity for low-wage workers and small business owners, particularly those in agriculture and retail sectors. Many local businesses, including farms that rely on digital tools for equipment management and supply chain logistics, could experience financial losses that result in job instability. Workers in hourly wage positions, who often lack financial safety nets, would face heightened economic challenges if payroll or banking systems were compromised. Without targeted recovery efforts and digital equity initiatives, underserved populations may struggle to navigate the long-term consequences of a cyberattack, deepening existing disparities in access to financial and public services.

Economy

If a cyber incident were to occur in the planning area, it could significantly disrupt the local economy, particularly in key sectors like agriculture and local businesses. The agricultural sector, which is a cornerstone of the county's economy, increasingly relies on digital tools and automated systems for tasks such as irrigation, livestock management,

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and supply chain coordination. A cyberattack targeting these technologies could delay production, cause crop losses, or disrupt livestock management, leading to financial setbacks for farmers and related businesses like food processors and transporters. The interconnected nature of agriculture means that disruptions at the farm level could have ripple effects throughout the local and regional economy, affecting everything from production to distribution.

Local businesses, especially small businesses, would also be vulnerable to economic fallout. A cyberattack that compromises point-of-sale systems or customer data could result in revenue loss, reputational damage, or even long-term shutdowns, particularly for those with limited resources for cybersecurity and recovery efforts. Additionally, a breach of public services, including local government systems or utilities, could result in the diversion of public funds toward recovery efforts, delaying local projects and potentially increasing taxes or reducing available services. This combination of impacts across multiple sectors could slow overall economic growth and strain the financial stability of the planning area.

Built Environment

General Property

If a cyber incident were to occur in the planning area, the direct impact on property values would likely be minimal, as cyberattacks typically do not affect physical assets like land or buildings. However, there could be indirect effects on property values, particularly if the incident causes long-term disruptions to critical services or leads to widespread economic instability.

For instance, if a cyberattack were to significantly disrupt essential services such as utilities (electricity, water), transportation, or public safety systems, it could make certain areas less desirable for both residents and businesses. If local businesses or public services face extended downtime, it could lead to economic challenges for the community, reducing demand for housing or commercial properties. In rural areas where agriculture is a primary economic driver, a cyberattack that affects farm operations or supply chains could lead to reduced economic activity, which may indirectly impact property values in those areas over time.

Additionally, if a cyber incident targets public infrastructure or government services, the perception of vulnerability or inadequate security could deter potential buyers or investors, contributing to a slowdown in property market growth. The overall effect on

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property values would largely depend on the scope and duration of the disruption and how quickly the community recovers from the incident.

Critical Infrastructure

If a cyber incident were to occur in the planning area, the impact on critical infrastructure could be substantial, as many essential services rely on digital networks for operation and communication. A cyberattack targeting critical infrastructure such as energy grids, water treatment facilities, transportation systems, or telecommunications could cause widespread service disruptions.

For example, an attack on the energy sector could result in power outages, affecting homes, businesses, and vital services like healthcare facilities. A disruption in the water treatment systems could lead to a loss of clean water access or contamination risks, severely impacting public health. In rural areas, where agriculture is a key part of the economy, cyberattacks targeting SCADA (Supervisory Control and Data Acquisition) systems used to manage irrigation and production processes could halt farming operations, leading to economic losses.

Additionally, disruptions to telecommunications networks would impair communication between emergency responders and the public, complicating efforts to manage and recover from the incident. Transportation infrastructure could also be affected if cyberattacks target traffic control systems, road sensors, or even local government logistics, causing delays or road closures.

Overall, the impact on critical infrastructure would depend on the nature and scope of the cyberattack, but it could cause significant operational disruptions, affect public safety, and result in long-term economic consequences for the planning area.

Historical, Cultural, and Natural Environment

If a cyber incident were to occur in the planning area, the direct impact on the historical, cultural, and natural environment might not be as immediately evident as on critical infrastructure, but there could still be significant consequences, particularly if systems that manage or protect these areas are targeted.

For historical and cultural sites, a cyberattack could disrupt digital archives, databases, or systems used for the preservation of important records, artifacts, or historical documents. Many museums, libraries, and cultural centers rely on digital systems to catalog and manage collections, protect sensitive materials, and communicate with the public. A data

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breach or ransomware attack targeting these systems could lead to the loss of invaluable historical information or force prolonged closures of facilities such as the Anamosa State Penitentiary Museum, Monticello Heritage and Cultural Center, or Wyoming Historical Museum, which depend on digital records for preservation and research. Additionally, if the Jones County government's systems are compromised, records related to historic preservation efforts for sites like the Grant Wood Art Gallery in Stone City or the Edinburgh Pioneer Village could be lost, delaying or halting conservation projects.

The natural environment could also be indirectly affected by a cyber incident. If an attack compromises systems controlling environmental monitoring, water quality assessments, or agricultural management tools, it could lead to unintended harm to local ecosystems. Water treatment plants, waste management systems, or irrigation networks disrupted by a cyberattack could result in environmental contamination or mismanagement of natural resources, potentially affecting local rivers, forests, and wildlife habitats such as Wapsipinicon State Park, Pictured Rocks County Park, and Indian Bluffs State Preserve. The loss of automated monitoring systems could also hinder conservation efforts, making it more difficult to track water pollution levels, soil conditions, or invasive species outbreaks.

While a cyberattack might not physically harm historical or natural sites, the disruption of management systems, data loss, or operational failures could have long-term impacts on the planning area's ability to protect and maintain its historical, cultural, and natural resources.

Future Land Use and Development

If a cyber incident were to occur in the planning area, it could potentially impact future land use and development, particularly if the incident disrupts critical infrastructure or government systems that manage zoning, permits, and planning. Local government systems are often responsible for processing land development applications, issuing permits, and overseeing compliance with zoning regulations. A cyberattack that compromises these systems could delay or halt new development projects, affecting the timeline for housing, commercial, or industrial development.

Moreover, if critical infrastructure such as utilities, transportation systems, or telecommunications is significantly impacted by a cyber incident, it may lead to reconsiderations of where and how future development takes place. Areas that experience repeated disruptions in essential services may become less desirable for development, causing shifts in land use priorities. For instance, developers may avoid

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investing in areas where reliable access to electricity, water, or internet services has been compromised due to vulnerabilities in the infrastructure.

In addition, concerns about cybersecurity risks could lead to changes in land use policies and planning strategies. Local governments may require future developments to incorporate resilient infrastructure and stronger cybersecurity measures to protect digital systems that manage public utilities and services. This could shape the design and implementation of smart city technologies or influence decisions about where critical infrastructure is located, ensuring these systems are better protected against potential cyberattacks.

Overall, while a cyber incident may not directly alter the physical landscape, its effect on infrastructure management and development processes could have long-term implications for how land is used and developed in the planning area.

3.4.5.8 Consequence Summary

A cyber incident in the planning area could lead to widespread disruptions across essential sectors, including critical infrastructure, public services, and the local economy. Systems that provide energy, water, transportation, and telecommunications could be compromised, causing outages and delays in critical services like emergency response, healthcare, and local government operations. Businesses, especially those in agriculture and small industries, may face operational halts, leading to financial losses and economic instability. A breach of sensitive data could erode public trust and raise privacy concerns, potentially resulting in legal and financial repercussions. Furthermore, future land use and development projects could be delayed if planning and zoning systems are affected. The severity of these consequences would depend on the scale of the attack, but due to the interconnected nature of systems in the planning area, a cyber incident could have far-reaching impacts, requiring significant recovery efforts.

Category	Narrative
Impact on the Public	• Disruption of essential services such as water, electricity, and healthcare access. • Data breaches could lead to identity theft, privacy violations, and personal financial loss. • Increased anxiety and uncertainty among residents due to service outages and potential security risks.
Impact on the Economic Condition of the Planning Area	• Financial losses for local businesses and agricultural operations due to downtime and compromised digital systems.

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Category	Narrative
	• Disruptions to supply chains and production processes, impacting revenue and long-term economic stability. • Potential layoffs or business closures due to extended service disruptions.
Impact on the Historical, Cultural, and Natural Environment	• Loss or corruption of digital records related to cultural and historical preservation. • Disruption of environmental monitoring systems, potentially leading to unmanaged environmental damage. • Limited access to historical and cultural sites if systems managing public engagement are compromised.
Impact on Built Environment, General Property, and Critical Infrastructure	• Decreased property values in areas where service disruptions affect livability or economic activity. • Critical infrastructure, such as energy grids and water treatment plants, could experience severe disruptions, impacting public services. • Increased costs to repair or upgrade damaged infrastructure systems.
Impact on the Public Confidence in Government	• Erosion of trust in local government if services are not restored quickly or if personal data is breached. • Public perception of inadequate cybersecurity could lead to political or social unrest.
Impact on Responders	• Emergency responders may face communication breakdowns, delaying response times. • Increased workload and pressure to manage both the cyber incident and its cascading impacts on other sectors.
Impact on continuity of operations, including continued delivery of government services	• Interruptions in municipal services, including permitting, tax collection, and public records access. • Delays in planning and development processes due to compromised government systems. • Increased resource allocation for recovery, reducing focus on other essential services.
Cascading hazards	• Disruption of emergency services, leading to potential public safety risks. • Secondary issues, such as health hazards from water contamination or lack of access to medical services. • Potential infrastructure failures, compounding the overall impact of the cyber incident.

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3.4.6 Dam Failure

Probability	Population Impact	Property Impact	Economy Impact	Overall Hazard Ranking
1.31	1.13	1.31	1.19	4.76

3.4.6.1 Description

A dam failure hazard occurs when a dam that retains water, wastewater, or other liquids fails to hold back the contents as designed, resulting in an uncontrolled release of water. This sudden release can lead to catastrophic flooding downstream, causing significant property damage, environmental destruction, and potentially loss of life. Dam failures can occur due to several reasons, including structural weaknesses, improper design, poor maintenance, natural disasters like earthquakes, or extreme weather events that lead to overtopping.

Dam failures typically result from a combination of overtopping, foundation defects, and structural failures. Overtopping occurs when a dam is unable to pass excess water through its spillways, often during heavy rainfall or flooding, leading to erosion and eventual collapse. Foundation defects involve weaknesses in the ground beneath the dam, which can cause instability and failure over time, particularly in cases of poor site selection or construction. Structural failures, such as cracks or deteriorating materials, are common, especially in aging dams. Seepage, the uncontrolled movement of water through a dam or its foundation, can lead to internal erosion and piping, where tunnels form within the structure, weakening it. Earthquake damage is another cause, especially in areas prone to seismic activity, while poor maintenance and human error—such as improper operation or lack of inspections—can exacerbate vulnerabilities. Finally, design flaws in older dams not built to handle current environmental stresses can contribute to sudden failures. These factors underscore the need for rigorous inspection, maintenance, and modernization efforts to prevent dam failures.

Dams are classified based on the potential consequences of failure, not the likelihood of failure itself. The U.S. Federal Emergency Management Agency (FEMA) and other regulatory bodies use a hazard potential classification system that includes three main categories:

Classification of Dam Hazards

Low Hazard Potential - Failure or misoperation of the dam would result in minimal property damage, primarily confined to the dam owner's property, with no probable loss of human life. These dams are typically in rural, undeveloped areas.

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Classification of Dam Hazards

Significant Hazard Potential - A dam failure in this category could lead to economic losses, environmental damage, or disruption of infrastructure, but with no expected loss of life. These dams are often located near important infrastructure or lightly developed areas.

High Hazard Potential - Failure of these dams would result in probable loss of life due to flooding and damage to homes, businesses, and infrastructure in populated areas downstream. These dams are usually located near communities where the risk to people and property is high.

The Iowa DNR ensures that dams are in compliance with safety standards to prevent failures that could lead to significant damage or loss of life. Dams that pose the highest risk due to their location near populated areas or critical infrastructure receive more frequent and detailed inspections. Owners of dams are also responsible for the maintenance of their structures and must provide inspection reports as part of the safety protocols.

A dam failure can result in widespread flooding that could destroy homes, businesses, and infrastructure, disrupt transportation, and contaminate water supplies. The intensity of the flood depends on factors such as the dam's size, the volume of water released, and the geography downstream. Dam failures can also lead to long-term environmental impacts, such as habitat destruction and sedimentation in rivers.

Effective dam safety programs and regular inspections are crucial to reducing the risk of failure. Emergency action plans (EAPs) are required for high- and significant-hazard dams to ensure that emergency services are prepared to respond quickly if a failure occurs.

3.4.6.2 Location

In the planning area, all nine dams are classified as low hazard. This classification indicates that, while these dams hold back water and could pose a flooding risk if they were to fail, the potential consequences of such a failure are limited to minimal property damage, primarily affecting the dam owner's property, and do not pose a probable risk of loss of life. These dams are generally located near small waterways like the Wapsipinicon River and Maquoketa River, but are situated in areas where downstream flooding would have a low impact on residential, commercial, or critical infrastructure.

Despite being classified as low hazard, these dams still require regular inspection and maintenance to ensure their structural integrity and prevent any failures that could lead to localized flooding. The Iowa Department of Natural Resources (DNR) oversees these inspections, ensuring that the dams continue to meet safety standards and that any

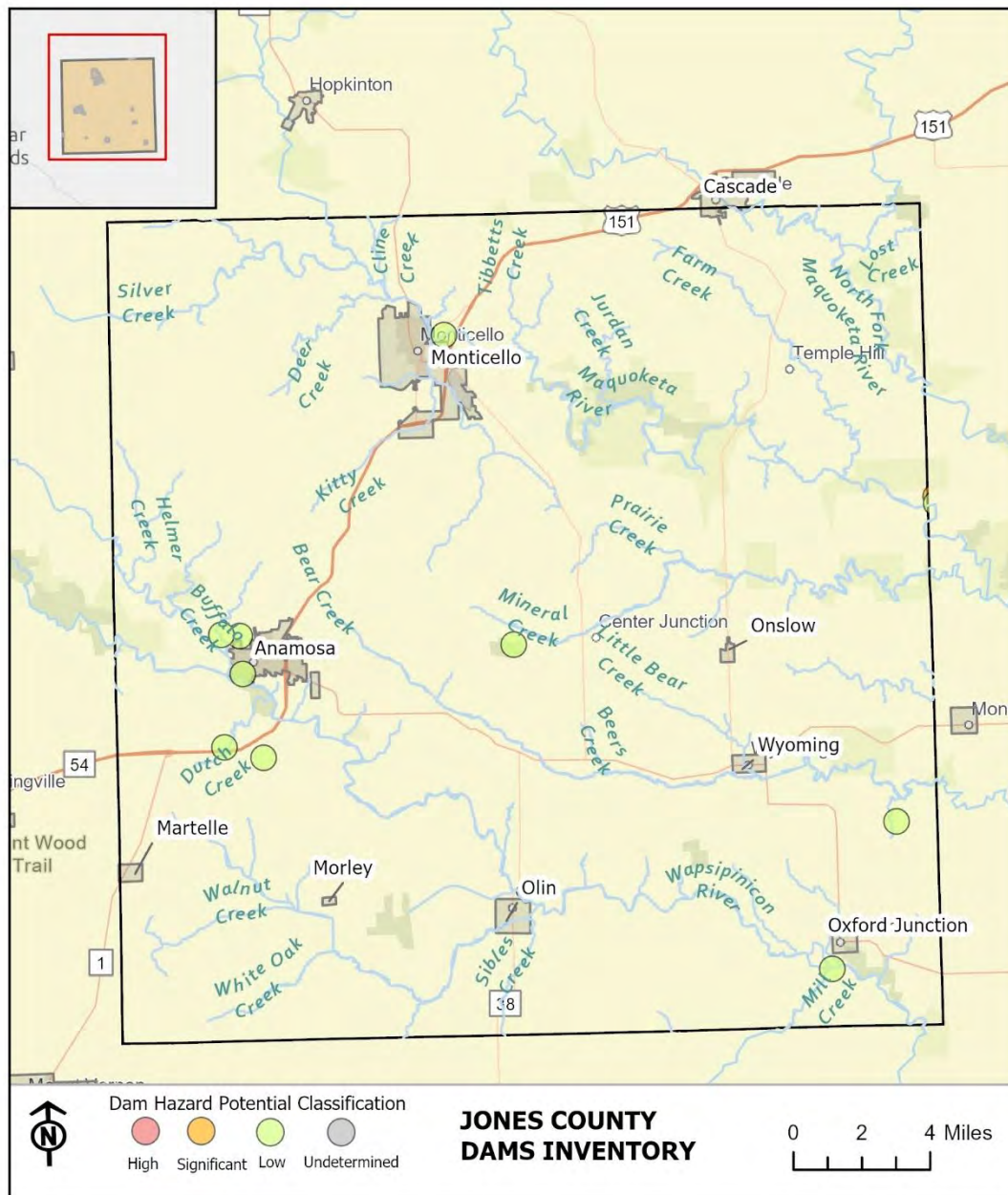
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potential risks are mitigated. The low hazard classification emphasizes the relative safety of these structures in terms of broader community impact, but maintenance remains important to minimize risks.

Dam	Hazard Class	Stream/River	Normal Storage	Condition
Clymer Dam	Low	Dutch Creek	75	Not Rated
Rolling Hills Estate Dam	Low	Wapsipinicon River	90	Not Rated
Monticello Milldam	Low	Maquoketa River	4,186	Not Rated
Anamosa	Low	Wapsipinicon River	650	Satisfactory
Oxford Mill Dam	Low	Wapsipinicon River	163	Not Rated
Central Park Lake Dam	Low	Mineral Creek	481	Not Rated
Norlin Dam	Low	Buffalo Creek	51	Not Rated
Pence Dam	Low	Bear Creek	60	Not Rated
Anamosa State Reformatory Dam	Low	Wapsipinicon River	50	Not Rated

Applicable Jurisdictions	
Unincorporated Jones County	City of Oxford Junction
City of Anamosa	City of Wyoming
City of Martelle	Anamosa CSD
City of Monticello	Midland CSD
City of Morley	Monticello CSD
City of Olin	Olin CSD
City of Onslow	Sacred Heart School
	St. Patrick School
Applicable	Not Applicable



3.4.6.3 Magnitude/Severity

In the planning area, where all dams are classified as low hazard, the magnitude and severity of a dam failure incident would be measured primarily by the localized impact rather than widespread destruction. A failure of a low-hazard dam would typically result in minor flooding, with the affected areas limited to farmland or undeveloped land rather than heavily populated regions. The extent of flooding is a key factor in determining severity, but due to the limited capacity of these dams, the flooding would likely be

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contained. Similarly, the potential damage to infrastructure, such as farm roads, small bridges, or culverts, would be minor and localized, further limiting the overall impact.

The duration of the event and the time required for repairs would also influence the severity. If the flooding persists, it could lead to more substantial damage to crops or local property, increasing the economic and environmental consequences. There could also be short-term environmental impacts, such as soil erosion or sediment displacement, though these would typically be localized and temporary. Overall, the magnitude and severity of a dam failure in the planning area would be rated as low to moderate, given the limited scope of the impact and the lack of significant risks to human life or major infrastructure.

3.4.6.4 Past Occurrences

In Iowa, there have been notable dam failures that offer important lessons for managing dam safety. One of the most significant events occurred in 2010 with the failure of the Lake Delhi Dam on the Maquoketa River. After receiving approximately 10 inches of rain in 12 hours, the dam was overtopped and eventually breached. The failure caused extensive flooding downstream, leading to millions of dollars in damage to homes, businesses, and public infrastructure, particularly in the towns of Monticello and Hopkinton. Fortunately, due to timely evacuations, no lives were lost. Subsequent investigations revealed that maintenance issues, including a malfunctioning spillway gate and design deficiencies, contributed to the failure.

Another significant historical incident occurred during the 2008 Iowa floods, when multiple dams across the state faced critical challenges due to intense rainfall and rising river levels. Some dams experienced overtopping, though not all resulted in complete failures. These events highlight the importance of proper maintenance, timely repairs, and robust design to withstand extreme weather conditions, which are becoming more frequent.

These failures emphasize the need for comprehensive dam safety inspections, proper emergency action plans, and regular maintenance to prevent future incidents. Iowa continues to monitor and assess its dams to mitigate the risks associated with aging infrastructure and increasing extreme weather patterns.

3.4.6.5 Likelihood of Future Occurrence

The likelihood of future dam failures in the planning area, is considered low based on current local, regional, and state information. All of the dams in the planning area are

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classified as low hazard, meaning that while a failure could cause localized property damage, it is unlikely to result in significant downstream consequences or loss of life. This classification reflects the relatively small size and capacity of these dams and their locations, which tend to be in less populated or rural areas.

At the state level, Iowa has experienced significant dam failures in the past, such as the 2010 Lake Delhi Dam failure, but those involved dams with larger capacities or more complex designs. Iowa's Dam Safety Program, overseen by the Iowa Department of Natural Resources (DNR), conducts regular inspections and mandates proper maintenance, reducing the risk of future failures, even for low-hazard dams.

Regionally, the Midwest is subject to increasing instances of extreme weather events such as heavy rainfall and flooding, which can increase pressure on dam infrastructure. However, the combination of regular monitoring, maintenance, and the lower hazard classification of dams in the planning area suggests that the overall risk of a dam failure remains low, barring unusual or extreme weather conditions. Proper maintenance and compliance with inspection protocols further reduce the likelihood of future dam failures.

3.4.6.6 Climate Change Considerations

For dam failure hazards in the planning area, climate change is generally not considered a direct factor, as this is not inherently a natural hazard. However, there are indirect considerations due to the potential increase in extreme weather events associated with climate change, such as heavier rainfall and more frequent flooding. These conditions can place additional stress on dams, even those classified as low hazard, by increasing water levels and potentially causing overtopping or erosion. While the current classification of dams in the planning area suggests a low risk of severe consequences, the changing climate may require more attention to spillway capacity, structural integrity, and emergency planning to account for these weather-related stresses.

Thus, while climate change may not be a primary driver of dam failure, the increasing frequency and intensity of storms due to climate change could elevate risks over time, making regular inspections and proactive infrastructure upgrades even more important in managing dam safety.

3.4.6.7 Vulnerability

People

If a dam failure were to occur in unincorporated Jones County, the City of Anamosa, or the City of Monticello, the direct impact on the general population would likely be minimal due to all dams in the county being classified as low hazard. While localized flooding could affect nearby property and infrastructure, heavily populated areas are not at significant risk, and the likelihood of loss of life is very low. However, the impact on vulnerable and underserved populations, particularly those with limited mobility, low-income households, and residents dependent on rural infrastructure, could be more pronounced. Households without access to personal transportation (1.4%) may face difficulties evacuating or navigating road closures if flooding damages rural roads or small bridges.

Localized flooding could also disrupt essential services in affected areas, particularly for farmworkers and low-income residents who rely on daily agricultural labor for income. Damage to agricultural land or rural roads could impact residents working in farming operations, many of whom have fewer financial resources to recover from unexpected losses. Those with disabilities (13.1% of the population) or older adults in affected rural areas may face additional challenges in accessing emergency services or alternative routes if their primary means of travel is disrupted.

While emergency services would likely respond quickly, the ability of underserved populations to recover could be unequal, particularly if they lack financial resources, insurance, or alternative housing options. Farmworkers and low-income households in flood-affected areas may struggle with economic hardship if recovery efforts do not account for the specific needs of at-risk communities. Ensuring equitable access to emergency response, transportation assistance, and recovery funding will be critical in minimizing disparities in disaster impacts.

Economy

The economic impact would likely be limited due to the county's dams being classified as low hazard. The primary economic consequences would be confined to localized property damage, such as flooded farmland or damage to small roads and bridges. For farmers, this could result in crop losses or temporary disruption of farming operations, which would lead to some financial strain. However, because these dams are not located near significant population centers or major infrastructure, the broader economic effects would be minimal.

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Local businesses and infrastructure repairs could incur minor costs, especially if roads or utilities are impacted by flooding. The county would need to allocate resources for repairs and recovery efforts, but these would be relatively small compared to larger dam failures in higher hazard areas. Overall, while there could be localized financial losses, the general economy of the planning area would likely remain unaffected by a dam failure, barring any unusually extreme circumstances or secondary impacts.

Built Environment

General Property

The impact on property values would likely be minimal, given that all dams in the county are classified as low hazard. The localized nature of potential flooding means that any damage would primarily affect farmland, rural roads, or small structures near the dam, rather than densely populated residential or commercial areas. As a result, there would be little to no significant impact on property values in the broader county.

However, for properties located immediately downstream of the dam, especially those directly impacted by localized flooding, there could be a temporary reduction in value. This would be due to potential damage and disruption of land use, particularly for agricultural properties, which might experience short-term devaluation until repairs and recovery are completed. Any lasting damage or difficulty in insuring these properties could slightly affect their marketability.

In general, though, given the low-risk classification of the dams, the broader real estate market in the planning area would likely remain stable, and any localized declines in property value would be short-lived and limited in scope.

Critical Infrastructure

The impact on critical infrastructure would likely be minimal due to the classification of all dams in the county as low hazard. The dams are not located near large population centers or significant infrastructure, which limits the potential for widespread damage. However, localized flooding could affect smaller, critical infrastructure, such as rural roads, small bridges, and utility lines, potentially disrupting transportation and services in the immediate area.

For example, rural roadways could become impassable, affecting emergency services and farm operations that rely on these roads for daily functions. If a small bridge or

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culvert were damaged, it could isolate certain areas, particularly in the more rural parts of the county, requiring temporary rerouting or repairs. In addition, utility services like local water lines or electric poles could experience minor disruptions, although this would likely be contained to a small area near the failure site.

Overall, the impact on critical infrastructure in the planning area from a dam failure would be primarily localized, causing temporary disruptions rather than long-term damage to essential services or infrastructure that supports the broader community. The county's focus would likely be on quick repairs and restoration to minimize the impact on local residents and services.

Historical, Cultural, and Natural Environment

The impact on the historical, cultural, and natural environment would likely be limited due to the low hazard classification of all dams in the area. While most historical and cultural sites are not located near these dams, minor damage to smaller structures or community landmarks in the vicinity could occur if localized flooding were significant. Sites such as the Hale Bridge, which spans the Wapsipinicon River, or the historic Monticello Dam area could be affected by rising water levels or erosion, potentially threatening their structural integrity. Additionally, any temporary road closures or infrastructure damage could limit access to landmarks like the Anamosa State Penitentiary Museum or Edinburgh Pioneer Village, though direct and lasting damage is unlikely.

The natural environment might experience localized impacts such as erosion, sediment displacement, or temporary alterations to watercourses. These changes could affect nearby rivers and streams, particularly the Wapsipinicon River and its tributaries, potentially disrupting aquatic habitats and wildlife. Wapsipinicon State Park and Pictured Rocks County Park, both of which feature riverfront ecosystems, could see temporary flooding that impacts trails, natural habitats, and recreational areas. Additionally, the surrounding landscape, including agricultural lands, wetlands, and conservation areas, could suffer from soil erosion and water runoff contamination in the immediate aftermath of the flooding. However, these effects would likely be contained to the area immediately downstream of the dam and would be temporary, with most of the county's historical, cultural, and natural resources remaining unaffected.

Future Land Use and Development

The impact on future land use and development would likely be minimal, given that all dams in the county are classified as low hazard. The primary effect of a dam failure would

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be localized flooding, which could temporarily affect agricultural land or small infrastructure, but it would not significantly alter broader development plans for the county. Most of the land downstream of these low-hazard dams is rural and agricultural, meaning the affected areas would likely return to normal use once repairs are completed.

In terms of future development, zoning regulations or land use policies may not see substantial changes due to the low risk associated with these dams. However, any areas immediately downstream of the dams that are impacted by flooding could experience more stringent building codes or development restrictions to mitigate potential risks from future dam failures. Local authorities might require additional assessments for new developments in these areas to ensure they are safe from potential flood risks, but overall, the county-wide development strategy would likely remain unchanged. Future land use would continue to focus on agricultural productivity and rural development, with minimal long-term consequences from any localized dam incidents.

3.4.6.8 Consequence Summary

If a dam failure were to occur in planning area, the consequences would likely be localized and limited due to the low hazard classification of the county's dams. The primary impact would involve localized flooding, affecting farmland, small roads, or bridges in rural areas. There would likely be minimal risk to human life or significant infrastructure, with the effects mostly confined to areas immediately downstream of the dam. The natural environment could experience temporary disruptions, such as soil erosion or sediment displacement, but these would not lead to long-term damage. In terms of future land use, development in the affected areas may require more cautious planning or stricter building codes, but the broader county would continue normal operations with limited long-term effects.

Category	Narrative
Impact on the Public	- Localized flooding could affect rural residents and farmers but poses minimal risk to human life. - Temporary disruptions to daily life in areas near the failure, such as road closures or limited access to farmland.
Impact on the Economic Condition of the Planning Area	- Economic losses primarily in agriculture, with potential damage to crops and farmland. - Costs associated with repairing rural infrastructure like roads and small bridges, but limited long-term economic consequences.

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Category	Narrative
Impact on the Historical, Cultural, and Natural Environment	- Minimal impact on historical or cultural sites, as most are not located near low-hazard dams. - Possible temporary environmental damage, such as soil erosion and displacement of sediment, affecting local waterways and ecosystems.
Impact on Built Environment, General Property, and Critical Infrastructure	- Localized property damage near the dam, but little to no broad effect on property values across the county. - Minor disruptions to critical infrastructure, such as rural roads and bridges, which would require repair but not cause significant long-term damage.
Impact on the Public Confidence in Government	Potential for reduced public confidence in local authorities if response and repairs are slow, but overall limited impact due to the low risk classification of these dams.
Impact on Responders	Emergency responders may face minor logistical challenges related to flooding and temporary road closures, but the overall demand on responders would be limited.
Impact on continuity of operations, including continued delivery of government services	Government services would likely experience minimal disruption, as the failure would affect only localized areas with little impact on broader county operations.
Cascading hazards	Secondary risks such as minor transportation issues or temporary contamination of local water sources could arise, but significant cascading hazards are unlikely given the low hazard classification.

3.4.7 Drought

Probability	Population Impact	Property Impact	Economy Impact	Overall Hazard Ranking
2.44	1.69	1.81	2.13	13.74

3.4.7.1 Description

A drought hazard occurs when an area experiences a prolonged period of below-average precipitation, leading to a shortage of water supply. Droughts can develop slowly over time, often beginning with a dry spell that intensifies if rainfall remains scarce. They are driven by climatic factors, such as changes in weather patterns or ocean temperatures, and can be exacerbated by human activities like overuse of water resources.

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In Iowa, droughts primarily occur due to seasonal variability in rainfall and extended periods of hot, dry weather during the summer. Iowa’s agricultural sector is particularly vulnerable, as drought can lead to crop failures, reduced yields, and stressed livestock due to lack of water and feed. Farmers in Iowa are often the hardest hit, with economic losses in the millions of dollars during severe droughts. Droughts can also strain public water supplies, leading to restrictions on water use for households, businesses, and municipalities.

Beyond agriculture, the environmental impacts of drought include reduced water levels in rivers and lakes, affecting wildlife habitats and causing water quality issues. As water levels drop, aquatic ecosystems can suffer, and fish populations may be negatively impacted. Additionally, drought increases the risk of wildfires, particularly in rural and forested areas, as dry conditions make vegetation more flammable.

Droughts in Iowa are typically monitored by agencies like the U.S. Drought Monitor and state authorities, which issue drought warnings and help manage water resources during these periods. Though they develop gradually, the wide-ranging effects of drought can linger long after normal rainfall resumes, making it a significant hazard for both the economy and environment in Iowa.

3.4.7.2 Location

In the planning area, the effects of drought are not confined to a single location but tend to be regional, impacting a broad geographic area. Droughts develop over large regions due to prolonged periods of below-average rainfall and high temperatures, affecting not just the planning area but the surrounding counties and the entire state of Iowa. This regional nature means that while specific impacts may vary slightly from one locality to another, the overall conditions—such as reduced soil moisture, water shortages, and economic stress—are felt across a wide area. Therefore, any drought in the planning area would likely be part of a broader regional drought affecting other agricultural counties in Iowa, amplifying its effects on farmland, water resources, and the local economy. The planning area's reliance on agriculture makes it vulnerable to the same challenges faced by the rest of the region during prolonged dry periods.

Applicable Jurisdictions	
Unincorporated Jones County	City of Oxford Junction
City of Anamosa	City of Wyoming
City of Martelle	Anamosa CSD
City of Monticello	Midland CSD

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City of Morley	Monticello CSD
City of Olin	Olin CSD
City of Onslow	Sacred Heart School
	St. Patrick School

Applicable Not Applicable

3.4.7.3 Magnitude/Severity

The magnitude and severity of a drought in the planning area, or the broader planning area, is primarily measured using the U.S. Drought Monitor, which categorizes drought into five levels: D0 (Abnormally Dry), D1 (Moderate Drought), D2 (Severe Drought), D3 (Extreme Drought), and D4 (Exceptional Drought). These categories reflect the intensity of the drought based on factors such as soil moisture levels, streamflow, precipitation deficits, and vegetation stress. A prolonged period in D3-D4 drought, as seen in some past events in Iowa, can severely impact agriculture, water supply, and fire risks.

	LEVEL	DESCRIPTION
 Abnormally Dry	D0	• Short-term dryness slowing planting, growth of crops • Some lingering water deficits • Pastures or crops not fully recovered
 Moderate Drought	D1	• Some damage to crops, pastures • Some water shortages developing • Voluntary water-use restrictions requested
 Severe Drought	D2	• Crop or pasture loss likely • Water shortages common • Water restrictions imposed
 Extreme Drought	D3	• Major crop/pasture losses • Widespread water shortages or restrictions
 Exceptional Drought	D4	• Exceptional and widespread crop/pasture losses • Shortages of water creating water emergencies

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In Iowa, agriculture is particularly vulnerable during severe droughts, as low soil moisture hinders crop growth, leading to widespread crop failure and economic losses for farmers. This in turn causes secondary financial impacts on consumers due to reduced produce availability and rising food prices. Additionally, livestock operations are strained due to increased costs of feed and water scarcity.

Beyond agriculture, urban areas in the planning area may also experience rising water costs and restrictions on water usage, which can affect households, businesses, and recreational activities that depend on water sources like lakes and reservoirs. Low water levels can reduce the availability of recreational opportunities, while the risk of wildland fires significantly increases due to the dry conditions, further adding to the severity of a drought.

To assess the severity of drought in comparison to other hazards, historical data from past drought events in Iowa are used. For example, during the 2012 drought, large portions of Iowa were in D3-D4 Extreme Drought for extended periods, resulting in significant economic, environmental, and societal impacts, much like the 2002 drought event referenced. Although critical infrastructure services typically remain unaffected, the overall water supply levels and quality can be severely impacted, making drought a hazard with far-reaching consequences for the entire planning area.

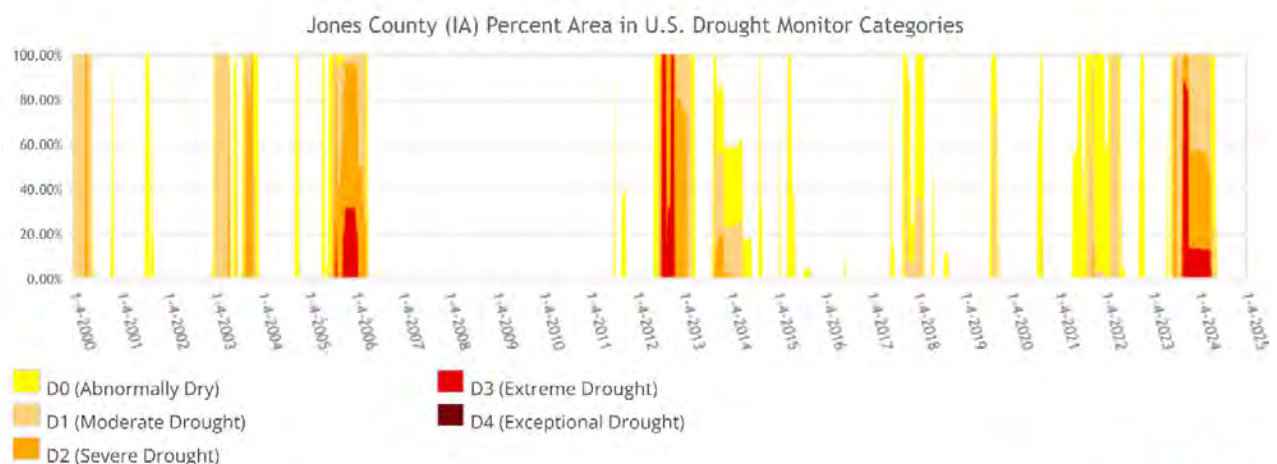
3.4.7.4 Past Occurrences

Droughts in the Midwest, including Iowa, occur periodically, though their frequency and severity can vary. On average, significant drought events affecting the region occur roughly every 10 to 20 years. These droughts can last for several months to multiple years and typically impact agriculture, water resources, and local economies. While not an annual occurrence, the cyclical nature of droughts is driven by climate patterns, making them a recurring challenge for the region. The following are some historical examples of these major droughts:

- 1930s (Dust Bowl): Severe drought throughout the U.S., especially in the Midwest, including Iowa. Resulted in widespread crop failure, soil erosion, and mass migration. Impacted farming communities heavily.
- 1950s (Great Plains Drought): A multi-year drought that affected much of the central U.S. including Iowa. This led to significant agricultural losses and spurred the development of modern water management systems.

- 1988: One of the worst droughts in U.S. history, affecting Iowa and much of the Midwest. This drought caused around \$40 billion in agricultural damage, with corn and soybean yields dropping drastically.
- 1993: While this year is known for severe flooding, Iowa and parts of the Midwest faced drought conditions prior to the floods, impacting early planting and agricultural production.
- 2002: The U.S., particularly the Midwest and Western states, experienced moderate to severe drought. Iowa saw reduced crop yields, particularly in corn and soybean production.
- 2012 (Midwest Drought): This was one of the worst droughts in recent U.S. history, with Iowa and surrounding states severely impacted. Corn and soybean yields were drastically reduced, contributing to spikes in food prices.
- 2020 (Western U.S. Drought): While the worst of the drought was in the Western U.S., Iowa and parts of the Midwest also experienced dry conditions, leading to reduced crop yields and stressing water resources.
- 2021: A significant drought affected much of the Western and Midwestern U.S., including Iowa, leading to reduced crop yields, particularly for corn and soybeans, and contributing to wildfires and water shortages in some areas.

From 2000 through September 16, 2024, the planning area, according to data from the U.S. Drought Monitor, experienced some level of drought (classified as Abnormally Dry (D0) or worse) approximately 45% of the time, or about 562 weeks out of a total 1,277-week period. Moderate Drought (D1) occurred around 24% of the time, equating to 306 weeks. Severe Drought (D2) conditions were present for about 14% of the time, or 179 weeks, while Extreme Drought (D3) conditions occurred approximately 4% of the time, or 51 weeks. The following chart represents weeks in drought during this time period:



From the U.S. Drought Monitor website, <https://droughtmonitor.unl.edu/DmData/TimeSeries.aspx>, 9-16-2024



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3.4.7.5 Likelihood of Future Occurrence

The likelihood of future drought occurrence in the planning area, is moderate to high, based on historical patterns at the local, regional, and state levels. Iowa, including the planning area, is part of the Midwest, which experiences cyclical droughts due to its reliance on rainfall and vulnerability to shifts in climate patterns such as La Niña and El Niño. While the county has been impacted by past droughts, such as in 1988, 2012, and 2021, future drought risk is expected to persist or increase, as climate models suggest more extreme weather patterns, including hotter temperatures and irregular precipitation. Additionally, agriculture, which is a critical part of the planning area's economy, remains particularly vulnerable to these drought conditions. State and regional water management strategies can help mitigate some of these impacts, but the area is still prone to periodic droughts, as seen in the broader Midwest.

3.4.7.6 Climate Change Considerations

Climate change considerations are important when assessing the future risk of droughts, as these are natural hazards directly influenced by changes in temperature and precipitation patterns. In the context of droughts, climate change is expected to increase their frequency and severity in many regions, including the Midwest and Iowa. Warmer temperatures can lead to increased evaporation, reduced soil moisture, and more intense heatwaves, which can exacerbate drought conditions. Additionally, shifting precipitation patterns, such as more intense rainfall over shorter periods, can result in less water retention in soils, further heightening drought risks. For the planning area, climate change may lead to more frequent and severe droughts, posing a greater threat to agriculture, water resources, and local ecosystems. These considerations make it essential to plan for drought as a climate-related hazard moving forward.

3.4.7.7 Vulnerability

People

The impacts of drought on the general population could be significant, with vulnerable and underserved populations facing heightened risks. As drought conditions persist, water shortages and restrictions may disproportionately affect households relying on private wells, renters with limited control over water conservation measures, and individuals with disabilities (13.1%) who depend on consistent water access for medical needs. Older adults and those with chronic illnesses may be particularly vulnerable to heat-related illnesses and respiratory issues as drought conditions contribute to poor air quality, increased dust, and elevated temperatures.

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A prolonged drought could exacerbate public health risks, particularly for low-income households (11.4% of residents below the poverty line) who may lack access to cooling systems or be unable to afford increased water costs if supplies become strained. Individuals without personal transportation (1.4% of households) may also face difficulties in accessing water distribution sites if emergency measures are enacted. Additionally, residents of group quarters or assisted living facilities may experience greater isolation if drought-related conditions lead to water rationing or disruptions to essential services.

Beyond physical health concerns, drought-related environmental changes, including loss of green spaces, reduced recreational access, and heightened wildfire risk, could negatively impact mental well-being and community cohesion. Underserved populations with fewer options for safe outdoor spaces or access to air-conditioned shelters may experience greater stress and reduced quality of life as conditions worsen. Ensuring equitable access to water resources, cooling centers, and health services will be essential in minimizing the disproportionate burden on at-risk populations.

Economy

The local economy could experience notable negative impacts, particularly in the agricultural sector, which is a key driver of the county's economy during a drought. Crop failures or reduced yields for major crops such as corn and soybeans could result in significant financial losses for farmers, leading to reduced income, higher costs for water and irrigation, and potential bankruptcies in more severe cases. This could also ripple through the economy, affecting agricultural supply chains, local businesses, and services that rely on farming activity.

Livestock producers could face challenges as well, with less available water and higher feed prices, further straining local agricultural operations. Additionally, drought conditions could increase costs for local municipalities due to the need for water conservation measures, infrastructure maintenance, and emergency responses. Reduced agricultural output could also result in lower tax revenues for the county, limiting resources for public services and development projects. Overall, a drought in the planning area could weaken the local economy, with the agricultural sector and related industries being the most heavily impacted.

Built Environment

General Property

If a drought were to occur in the planning area, it could have an indirect impact on property values, particularly for agricultural land and properties dependent on natural resources. Prolonged drought conditions could reduce the productivity of farmland, leading to lower land values as agricultural profitability declines. This reduction in productivity might make agricultural properties less attractive to buyers, leading to a potential decrease in demand and lower property values.

Residential property values could also be affected, especially in rural areas where water scarcity may lead to restrictions or higher costs for water supply. This could make some properties less desirable. Additionally, if drought conditions severely impact the local economy, the broader effects—such as declining employment or reduced services—could further depress property values in the area.

However, the impact on property values would largely depend on the severity and duration of the drought. In cases of short-term droughts, the effect on property values might be minimal, but prolonged or recurring droughts could result in more significant and lasting declines in property values in the planning area.

Critical Infrastructure

The impact on critical infrastructure could face several challenges, particularly related to water supply, energy, and transportation systems. Water infrastructure, including wells, reservoirs, and water treatment facilities, could be strained due to increased demand for limited water resources. Prolonged drought could lead to water shortages, requiring restrictions on water usage, increased costs for water treatment, and potential infrastructure upgrades to secure alternative water sources.

Energy infrastructure could also be impacted, as water is essential for cooling in power plants and for biofuel production, which is significant in Iowa. Reduced water availability could limit energy production capacity, leading to higher energy costs or disruptions in supply. Additionally, as temperatures rise during drought, increased electricity demand for cooling systems could place further strain on the energy grid.

Transportation infrastructure might face indirect impacts, particularly if drought leads to reduced water levels in rivers, affecting barge traffic on the Mississippi River, which is important for agricultural shipping. Prolonged dry conditions could also lead to soil

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subsidence, potentially damaging roads and bridges. Overall, the impact on critical infrastructure would depend on the severity of the drought, but water and energy systems would likely face the most immediate and significant challenges.

Historical, Cultural, and Natural Environment

If a drought were to occur in the planning area, the impact on the historical, cultural, and natural environment could be significant. Prolonged drought conditions could damage the county's natural landscapes, including parks, forests, and wetlands, leading to a loss of biodiversity, habitat degradation, and increased wildfire risk. River and stream levels could drop, affecting water quality and aquatic life in the Wapsipinicon River, Whitewater Creek, and Buffalo Creek, as well as reducing the recreational value of popular outdoor locations such as Wapsipinicon State Park, Pictured Rocks County Park, and Indian Bluffs State Preserve. Lower water levels could harm fish populations, disrupt boating and fishing activities, and alter wetland habitats that support migratory birds and native plant species.

Culturally, the planning area may experience a disruption to local traditions and events that are closely tied to the land, such as the Great Jones County Fair, local farmers' markets, and outdoor festivals celebrating the county's rural heritage. In addition, historic farms and rural homesteads, such as the Edinburgh Pioneer Village, which preserve early settler history, could face challenges due to water scarcity, potentially damaging historic buildings and landscapes through drought-related subsidence or soil erosion. Additionally, heritage sites with gardens, such as those at the Grant Wood Art Gallery in Stone City, could experience vegetation loss that diminishes their historical appearance and significance.

The natural environment, including native plant and animal species, would likely be the most visibly affected, with long-term damage to ecosystems if drought conditions persist. Streams and rivers may see reduced flow, which could harm local fish populations and other wildlife dependent on riparian habitats. Drought-stressed vegetation may also make forests and prairies more vulnerable to invasive species and increase wildfire susceptibility in dry grasslands and wooded areas such as Hale Wildlife Area and Whitewater Canyon Wildlife Area. These environmental changes could diminish the scenic and cultural significance of these natural landmarks, affecting recreational use, tourism, and conservation efforts.

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Future Land Use and Development

A drought locally could influence future land use and development in several ways. Prolonged or frequent droughts could make some areas less suitable for agricultural use, potentially prompting shifts in land use away from farming toward other activities such as solar energy development, conservation areas, or non-agricultural commercial development. The reduced availability of water could also lead to stricter regulations on water use and land management practices, influencing how developers approach new housing or industrial projects.

Agricultural land might be re-evaluated for its viability, particularly if water-intensive crops become less feasible due to frequent droughts. Developers might prioritize building in areas with more reliable access to water sources, or invest in infrastructure improvements to mitigate water scarcity, such as enhanced irrigation systems or water recycling facilities.

Additionally, drought conditions could slow residential development if water availability becomes a concern for future homeowners or municipalities. New zoning regulations or building codes might require drought-resistant landscaping, water-efficient infrastructure, and other sustainability measures, potentially increasing development costs. In summary, a drought could lead to shifts in land use planning, prioritizing water-efficient developments and potentially changing the agricultural landscape of the planning area, with long-term impacts on both rural and urban development.

3.4.7.8 Consequence Summary

A drought in the planning area, would have wide-ranging consequences, particularly affecting agriculture, water resources, and the local economy. Reduced crop yields would hit farmers hard, leading to financial stress and potential job losses, while water shortages could strain local infrastructure, requiring costly upgrades and usage restrictions. The natural environment would suffer from habitat degradation and biodiversity loss, and local ecosystems could be further impacted by increased wildfire risks. Additionally, future land use and development might shift to prioritize water-efficient practices, potentially changing the agricultural landscape and slowing residential growth due to concerns over water availability. Overall, a drought would create economic, environmental, and infrastructural challenges for the community.

Category	Narrative
Impact on the Public	Water shortages may lead to restrictions on usage for households and businesses.

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Category	Narrative
	- Increased food prices due to reduced agricultural yields. - Health risks from dust, poor air quality, and heat-related illnesses.
Impact on the Economic Condition of the Planning Area	- Significant financial losses for farmers due to crop failures. - Increased costs for irrigation and water management. - Reduced agricultural output affecting local businesses and tax revenue.
Impact on the Historical, Cultural, and Natural Environment	- Damage to natural ecosystems, leading to habitat loss and reduced biodiversity. - Potential harm to historic farmlands and rural landscapes due to soil erosion or water scarcity. - Disruption to local events and traditions tied to agriculture and outdoor activities.
Impact on Built Environment, General Property, and Critical Infrastructure	- Declining land values for agricultural properties. - Strain on water infrastructure leading to costly upgrades. - Potential damage to roads and bridges from soil subsidence.
Impact on the Public Confidence in Government	- Erosion of public trust if the government's response to drought is seen as slow or inadequate. - Frustration over water usage restrictions or the perceived mismanagement of resources.
Impact on Responders	- Increased demand on local emergency responders due to heat-related illnesses or wildfires. - Strain on resources and coordination for managing water distribution and drought response efforts.
Impact on continuity of operations, including continued delivery of government services	- Water shortages could disrupt essential services, such as firefighting and public utilities. - Increased costs for government operations related to water management and infrastructure repair.
Cascading hazards	- Increased risk of wildfires due to dry conditions. - Soil degradation and erosion affecting agriculture and infrastructure. - Potential public health issues due to poor air quality and extreme heat.

3.4.8 Earthquake

Probability	Population Impact	Property Impact	Economy Impact	Overall Hazard Ranking
1.13	1.25	1.63	1.56	5.02

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3.4.8.1 Description

An earthquake is caused by a sudden slip on a fault due to stresses in the earth's outer layer, which push the sides of the fault together. As stress builds, the rocks eventually slip, releasing energy in the form of seismic waves that travel through the earth's crust, causing the ground to shake. Injuries or fatalities in earthquakes are rarely the result of the ground's movement itself; they are more often caused by falling debris, collapsing buildings, and infrastructure damage. Earthquakes can also disrupt communications, power supplies, and utility lines, potentially triggering fires, landslides, dam failures, or hazardous material spills, compounding the risks.

Earthquakes occur along faults, which are fractures or zones of fractures between two blocks of rock. Faults are categorized into two types for planning purposes: active and inactive. Active faults have experienced recent movement and may displace in the future, while inactive faults show no evidence of movement in recent geological time, indicating they are dormant. Two forms of fault movement can pose hazards: fault creep, a slow and steady movement causing gradual structural damage, and sudden fault displacement during an earthquake, which can cause more severe structural failures.

In the planning area, the probability of a significant earthquake is relatively low due to the region's distance from major fault zones. While not a frequent hazard, it remains important to consider seismic risks in building codes and infrastructure planning, particularly for essential services and critical structures.

3.4.8.2 Location

Areas that could be impacted by an earthquake would likely include regions with older buildings and infrastructure, particularly in towns and communities with historical structures that may not be built to withstand seismic activity. Rural areas with less developed infrastructure could also be vulnerable, especially if they rely on older utilities like water lines and roads. Additionally, regions near rivers and valleys, such as those along the Wapsipinicon River, may be more susceptible to ground movement due to the underlying soil composition and potential for soil liquefaction. While earthquakes are rare, areas with these characteristics could experience more noticeable effects if seismic activity were to occur.

The planning area lies in proximity to the Plum River Fault Zone, which extends through eastern Iowa and into northwestern Illinois. While this fault is considered inactive with minimal seismic activity in recent history, its presence still holds geological significance

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for the region. Should an earthquake occur, areas of the planning area could potentially experience its effects due to their location relative to this fault zone. Though the likelihood of a major seismic event is low, the existence of the Plum River Fault highlights the importance of considering geological features in regional planning. The fault’s ancient movements have shaped the subsurface structures in parts of the county, and understanding these geological factors is essential for long-term land use and infrastructure decisions. While the planning area is not at high risk for earthquakes, the historical presence of this fault zone underlines the importance of awareness in planning and preparedness efforts.

Applicable Jurisdictions	
Unincorporated Jones County	City of Oxford Junction
City of Anamosa	City of Wyoming
City of Martelle	Anamosa CSD
City of Monticello	Midland CSD
City of Morley	Monticello CSD
City of Olin	Olin CSD
City of Onslow	Sacred Heart School
	St. Patrick School
Applicable	Not Applicable

3.4.8.3 Magnitude/Severity

The amount of energy released during an earthquake is typically expressed as a magnitude, measured directly from seismic activity recorded on seismographs. Seismologists have developed several magnitude scales over the years, one of the earliest being the Richter Scale, introduced in 1932 by Dr. Charles F. Richter of the California Institute of Technology. The Richter Magnitude Scale quantifies the magnitude, or strength, of the seismic energy released by an earthquake.

Magnitude	Mercalli Intensity	Effects	Frequency
Worldwide	I	Microearthquakes, not felt or rarely felt; recorded by seismographs	Continual
2.0-2.9	I to II	Felt slightly by some people; no damage to buildings	Over 1M per year
3.0-3.9	II to IV	Often felt by people; rarely causes damage; shaking of indoor objects noticeable	Over 100,000 per year
4.0-4.9	IV to VI	Noticeable shaking of indoor objects and rattling noises; felt by most people in the affected area; slightly felt outside; generally, no to minimal damage.	10K to 15K per year

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Magnitude	Mercalli Intensity	Effects	Frequency
5.0 to 5.9	VI to VIII	Can cause damage of varying severity to poorly constructed buildings; at most, none to slight damage to all other buildings; Felt by everyone	1K to 1,500 per year
6.0-6.9	VII to X	Damage to a moderate number of well-built structures in populated areas; earthquake-resistant structures survive with slight to moderate damage; poorly designed structures receive moderate to severe damage; felt in wider areas; up to hundreds of miles/kilometers from the epicenter; strong to violent shaking in epicentral area	100 to 150 per year
7.0-7.9	VIII and greater	Causes damage to most buildings, some to partially or completely collapse or receive severe damage; well-designed structures are likely to receive damage; felt across great distances with major damage mostly limited to 250 km from epicenter.	10 to 20 per year
8.0-8.9	VIII and greater	Major damage to buildings, structures likely to be destroyed; will cause moderate to heavy damage to sturdy or earthquake-resistant buildings; damaging in large areas; felt in extremely large regions.	One per year
9.0 and Greater	VIII and greater	At or near total destruction - severe damage or collapse to all buildings; heavy damage and shaking extends to distant locations; permanent changes in ground topography.	One per 10-50 years

Another measure of earthquake severity is Intensity. Intensity is an expression of the amount of shaking at any given location on the ground surface based on felt or observed effects. Seismic shaking is typically the greatest cause of losses to structures during earthquakes. Intensity is measured with the Modified Mercalli Intensity Scale.

MMI	Felt Intensity
I	Not felt except by a very few people under special conditions. Detected mostly by instruments.
II	Felt by a few people, especially those on upper floors of buildings. Suspended objects may swing.
III	Felt noticeably indoors. Standing automobiles may rock slightly.
IV	Felt by many people indoors; by a few outdoors. At night, some people are awakened. Dishes, windows, and doors rattle.

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MMI	Felt Intensity
V	Felt by nearly everyone. Many people are awakened. Some dishes and windows are broken. Unstable objects are overturned.
VI	Felt by everyone. Many people become frightened and run outdoors. Some heavy furniture is moved. Some plaster falls.
VII	Most people are alarmed and run outside. Damage is negligible in buildings of good construction, considerable in buildings of poor construction.
VIII	Damage is slight in specially designed structures, considerable in ordinary buildings, and great in poorly built structures. Heavy furniture is overturned.
IX	Damage is considerable in specially designed buildings. Buildings shift from their foundations and partly collapse. Underground pipes are broken.
X	Some well-built wooden structures are destroyed. Most masonry structures are destroyed. The ground is badly cracked. Considerable landslides occur on steep slopes.
XI	Few, if any, masonry structures remain standing. Rails are bent. Broad fissures appear in the ground.
XII	Virtually total destruction. Waves are seen on the ground surface. Objects are thrown in the air.

3.4.8.4 Past Occurrences

While there have not been any earthquakes recorded in Iowa, the following are historical examples of earthquakes in the Midwest:

- 1811-1812 (New Madrid, Missouri): Magnitudes estimated between 7.0 and 7.5 on the Richter Scale. These earthquakes caused severe ground shaking over a wide area, altering the landscape, creating new lakes, and even causing the Mississippi River to flow backward temporarily.
- 1968 (Southern Illinois): Magnitude 5.4. Felt over 23 states, it caused minor structural damage in Illinois and neighboring states, and was one of the strongest earthquakes in the Midwest in modern history.
- 2008 (Mt. Carmel, Illinois): Magnitude 5.2. This earthquake caused minor to moderate damage to buildings and infrastructure, primarily in southern Illinois and Indiana, and was felt across several states, including as far as Iowa and Georgia.
- 2011 (Oklahoma): Magnitude 5.6. Though not in the traditional Midwest, this earthquake was felt throughout the region, causing structural damage in Oklahoma and being linked to oil and gas activity, raising awareness of induced seismicity in the region.

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3.4.8.5 Likelihood of Future Occurrence

The likelihood of a future earthquake occurrence in the planning area is relatively low based on local, regional, and state information. Iowa is not situated near major active fault zones, and seismic activity in the state has historically been minimal. The closest significant fault system, the New Madrid Seismic Zone, is several hundred miles away and poses only a minor risk of distant tremors being felt in the area. Additionally, while eastern Iowa is home to the Plum River Fault Zone, this fault has been largely inactive in modern times. Though the probability of a strong earthquake occurring in the planning area is low, small tremors from distant seismic events or minor local seismic activity remain possible. Overall, the planning area is considered a low-risk area for earthquakes, but preparedness for rare events is still important.

3.4.8.6 Climate Change Considerations

There are no significant climate change considerations for earthquake hazards, as earthquakes are primarily caused by tectonic activity, which is unrelated to atmospheric conditions or climate. Earthquakes result from the movement of the Earth's crust along fault lines, which is driven by geological forces deep beneath the surface. While climate change can affect many natural hazards such as floods, storms, and droughts, it does not influence the frequency or magnitude of earthquakes. Therefore, in the context of the planning area and other regions, climate change is not a contributing factor to seismic risk, and earthquake preparedness focuses on building codes, land use planning, and emergency response rather than environmental or climate factors.

3.4.8.7 Vulnerability

People

If an earthquake were to occur or be felt in the planning area, it is most likely to be a minor tremor, given the region's low seismic activity. In such cases, the impact on people would likely be minimal, with most residents experiencing mild shaking or vibrations. Structural damage to buildings would be uncommon, especially for modern constructions, and injuries would be unlikely. Minor inconveniences, such as brief power outages or disrupted phone services, could occur, but significant impacts on daily life would be rare. Due to the infrequency of earthquakes in the area, the primary effect might be a sense of surprise or confusion among residents, rather than any serious harm.

In the event of a stronger earthquake, while less likely, the impact could be more pronounced, with potential risks to older buildings and infrastructure. Emergency

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services might be temporarily stressed, and utilities could experience interruptions, but these outcomes would depend on the severity of the earthquake. Nonetheless, the most likely scenario in the planning area involves minor shaking with limited impact on the population.

Economy

The economic impact would likely be minimal. In such a scenario, the shaking felt in the county would probably be mild, leading to little or no structural damage to buildings and infrastructure. Local businesses and industries would remain operational, and there would be no significant interruptions to daily activities. While minor vibrations may be felt, especially in taller buildings or in areas with older structures, the need for repairs or economic disruption would be very limited.

In rare cases where an external earthquake is stronger and felt more noticeably in the planning area, there could be temporary disruptions to services, such as minor power outages or interruptions in communications, but these would likely be resolved quickly with minimal economic fallout. Overall, the economic impact of feeling an earthquake from outside the county would be low, with little to no long-term financial consequences for the planning area's economy.

Built Environment

General Property

The impact on property values would likely be negligible. Since the area is not prone to significant seismic activity, a mild earthquake felt from a distance would not cause major property damage or lead to long-term concerns about earthquake risk. As a result, property values in the planning area would likely remain stable.

Even if a more noticeable earthquake was felt, unless there was visible damage to homes or infrastructure, the local real estate market would probably not be affected. Buyers and sellers would still view the planning area as having a low risk for seismic hazards, and property values would not be impacted by a distant event. Overall, any felt earthquake is unlikely to significantly influence property values in the planning area.

Critical Infrastructure

The impact on critical infrastructure would likely be minimal. Given the distance from major fault zones and the low likelihood of strong seismic activity, critical infrastructure

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such as roads, bridges, water treatment facilities, power lines, and communication systems would probably not experience significant damage.

Mild shaking could lead to minor disruptions, such as temporary power outages or brief interruptions in communication services, but these would likely be resolved quickly with little to no lasting damage. Older infrastructure or structures that are not built to modern seismic standards might experience very minor cosmetic damage, but the overall functionality of critical systems would remain intact.

The planning area's critical infrastructure would likely handle the event with minimal disruption and no major issues related to functionality or safety.

Historical, Cultural, and Natural Environment

The impact on the historical, cultural, and natural environment would likely be minimal. Given the distance from major fault zones, any shaking felt would be mild and unlikely to cause significant damage. Historical buildings or landmarks, especially those not retrofitted for seismic activity, might experience minor cosmetic damage such as small cracks or shifts in foundation, but structural integrity would likely remain intact.

Cultural sites, including museums or venues for local events, would likely not be affected beyond possible brief disruptions in events or services. Similarly, the natural environment, such as parks, forests, and rivers, would experience little to no impact, as the level of shaking would be insufficient to cause landslides or significant alterations to the landscape.

Future Land Use and Development

If the planning area were to feel the effects of an earthquake occurring outside the region, the impact on future land use and development would likely be minimal. Given the rare occurrence of seismic activity in the region, the experience of mild shaking would not likely influence future development patterns or land use decisions. Developers and planners would likely continue to view the area as low-risk for earthquakes, so seismic considerations would not become a central factor in planning or building design.

Existing zoning regulations and building codes, which may not heavily account for seismic risk, would likely remain unchanged, and there would be no significant push for stricter building requirements. However, older buildings and critical infrastructure may be considered for minor updates or reinforcements to ensure resilience against even rare

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events, but this would likely not have a widespread effect on land development in the planning area.

3.4.8.8 Consequence Summary

The consequences of an earthquake incident in the planning area would likely be minimal, as the region is not near major fault zones. A mild earthquake felt from a distant event would cause minor disruptions, such as brief power outages or minor cosmetic damage to older buildings or infrastructure. The historical, cultural, and natural environment would likely remain intact, and critical infrastructure would experience little to no lasting impact. Economic effects would be limited, with no significant changes to property values, future land use, or development. Overall, the region would experience only temporary, manageable effects.

Category	Narrative
Impact on the Public	• Minor shaking felt, little to no injuries. • Mild anxiety or confusion due to unfamiliarity with earthquakes.
Impact on the Economic Condition of the Planning Area	• Minimal economic impact. • Temporary business disruptions possible, but no long-term effects.
Impact on the Historical, Cultural, and Natural Environment	• Minor cosmetic damage to historical buildings. • Little to no impact on cultural sites or natural landscapes.
Impact on Built Environment, General Property, and Critical Infrastructure	• No significant effect on property values. • Critical infrastructure largely unaffected; minor cosmetic damage possible.
Impact on the Public Confidence in Government	• Likely unchanged, as damage and disruption would be minimal. • No major government response needed.
Impact on Responders	• Little to no strain on emergency services. • May require minor inspections or safety checks.
Impact on continuity of operations, including continued delivery of government services	• No significant disruption to government services. • Minor interruptions in communication or utility services possible.
Cascading hazards	• Very low risk of secondary hazards such as landslides or infrastructure failure. • Minor risks of power outages or communication disruptions.

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3.4.9 Extreme Temperature

Probability	Population Impact	Property Impact	Economy Impact	Overall Hazard Ranking
2.56	2.19	2.00	1.81	15.36

3.4.9.1 Description

Temperatures (including heat index) exceeding 100°F or three consecutive days with temperatures above 90°F are classified as an extreme heat event. A heat advisory is issued when temperatures reach 105°F, and a warning is issued at 115°F.

The heat index is a measure, expressed in degrees Fahrenheit, that indicates how hot it feels when relative humidity is factored into the actual air temperature. High relative humidity increases the perceived temperature because the human body relies on the evaporation of sweat to regulate heat. When humidity is high, perspiration does not evaporate as efficiently, reducing the body's ability to cool itself. At higher temperatures, even a lower level of relative humidity can significantly raise the heat index. For example, at 80°F, relative humidity must exceed 45% to raise the heat index above 80°F. However, at 110°F, much less humidity is needed to significantly increase the heat index.

Extreme cold is characterized by temperatures dropping below 0°F, with wind chill often bringing the perceived temperature significantly lower. A wind chill advisory is typically issued when wind chill values fall below -15°F, and a wind chill warning is issued when values drop below -25°F.

The wind chill factor is a measure, expressed in degrees Fahrenheit, that reflects how cold it feels when wind speed is taken into account with the actual air temperature. The human body loses heat more quickly when exposed to wind, which accelerates the cooling effect. As a result, the wind chill makes the temperature feel colder than the actual air temperature. For instance, when the air temperature is 0°F and the wind is blowing at 15 mph, the wind chill makes it feel like -19°F. The faster the wind, the greater the heat loss from the body, increasing the risk of frostbite and hypothermia in a shorter period of time.

3.4.9.2 Location

The entire jurisdiction of the planning area is susceptible to extreme temperature events, both extreme heat and extreme cold. Extreme heat affects all areas of the county, impacting people, livestock, crops, and infrastructure. Rural agricultural areas are



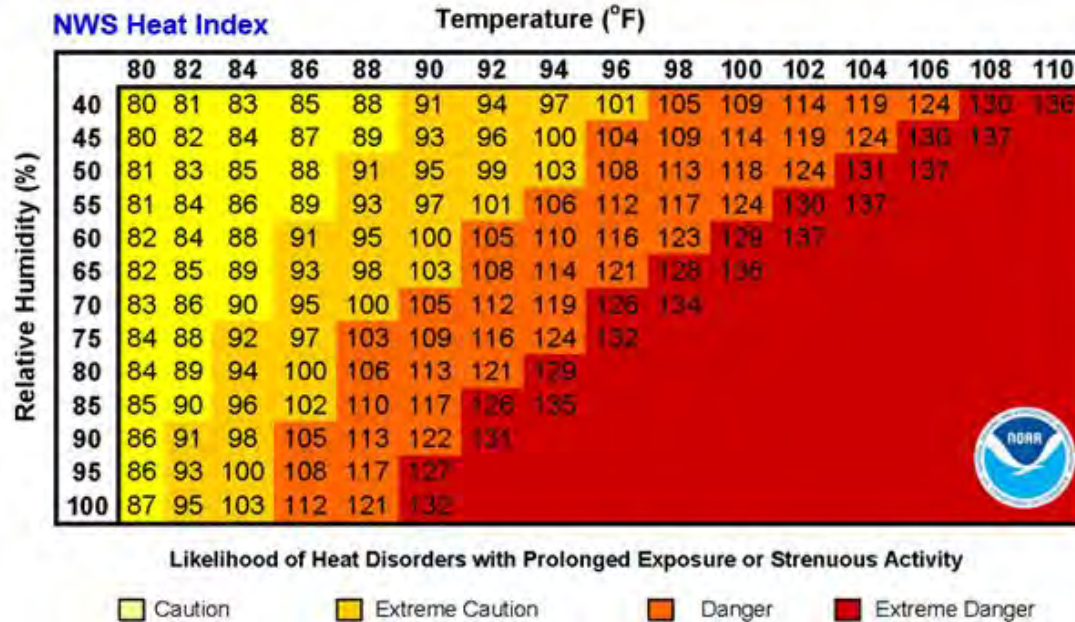
particularly vulnerable due to the potential effects on livestock and crop yields, which are highly sensitive to prolonged high temperatures. Urbanized areas may face additional challenges with heat retention due to the heat island effect, where buildings, roads, and other infrastructure absorb and retain heat, further intensifying the temperature.

Similarly, extreme cold poses a risk across the county, with rural areas potentially experiencing greater challenges due to isolation and delayed access to emergency services during severe winter storms. Farmers may face difficulties in protecting livestock and equipment from freezing conditions, while urban areas may deal with infrastructure issues such as frozen water pipes and hazardous road conditions. The extent of the impact from both extreme heat and cold depends largely on factors such as duration, intensity, and the preparedness of individuals, businesses, and government agencies to respond to these extreme temperature events.

Applicable Jurisdictions	
Unincorporated Jones County	City of Oxford Junction
City of Anamosa	City of Wyoming
City of Martelle	Anamosa CSD
City of Monticello	Midland CSD
City of Morley	Monticello CSD
City of Olin	Olin CSD
City of Onslow	Sacred Heart School
	St. Patrick School
Applicable	Not Applicable

3.4.9.3 Magnitude/Severity

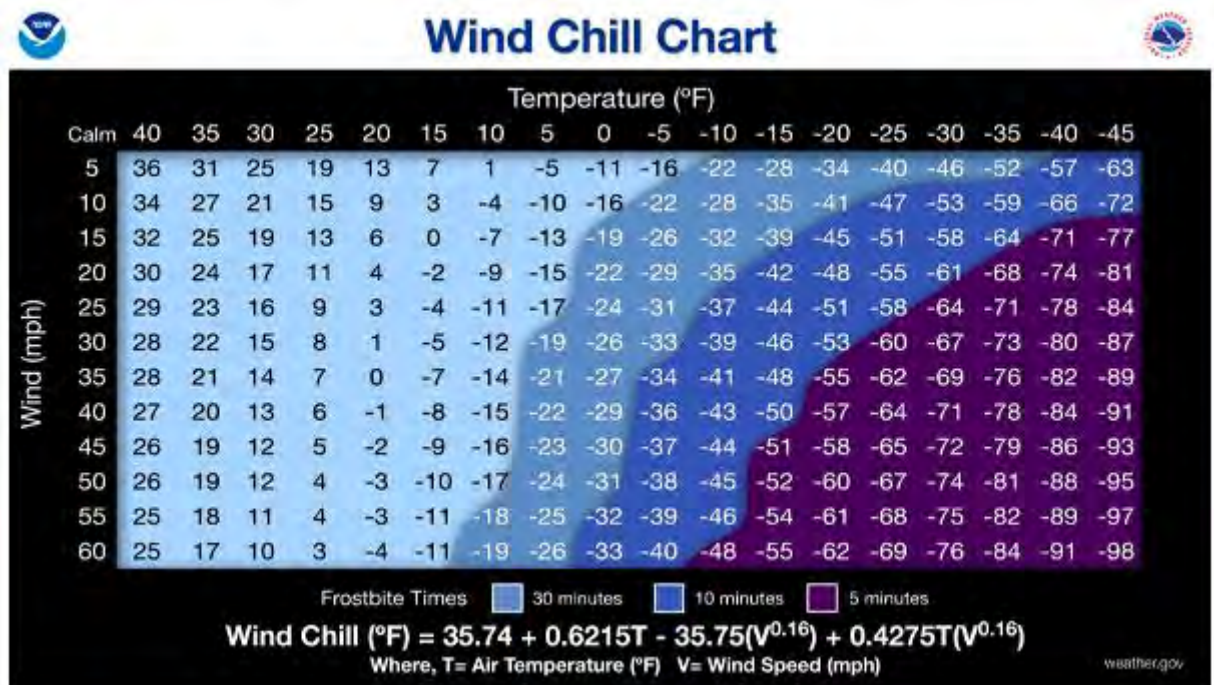
The magnitude and severity of extreme temperatures in the planning area are determined based on historical events, weather data, and the potential impacts on the local population, economy, and infrastructure. For extreme heat, the Heat Index (HI) is a key metric, combining temperature and humidity to indicate how hot it feels. In the planning area, extreme heat is characterized by temperatures exceeding 100°F or three consecutive days of 90°F or higher. When the Heat Index reaches 105°F, a heat advisory is issued, and an excessive heat warning is triggered when the Heat Index reaches 115°F. Extended periods of high heat with limited nighttime cooling (temperatures not dropping below 80°F) can exacerbate the severity of the event.



Iowa experiences high humidity due to warm, moist air masses that frequently move into the region. This moisture is further intensified by the state's vast agricultural lands, where crops like corn and soybeans release water vapor through evapotranspiration. Summer weather patterns, with stagnant air, allow moisture to accumulate in the atmosphere, and Iowa's mid-continent location, lacking coastal influences, means there are no moderating breezes to disperse it. These factors combine to create humid conditions, especially during the summer when both heat and moisture are at their peak.

For extreme cold, the Wind Chill Index is used to assess the perceived temperature when wind speeds are factored in with actual air temperatures. In the planning area, wind chills below -15°F prompt a wind chill advisory, while wind chills below -25°F lead to a wind chill warning. These cold temperatures increase the risk of frostbite and hypothermia in a short amount of time. The planning area is also vulnerable to freeze warnings and frost advisories, particularly during the growing season, when temperatures between 32°F and 35°F can damage crops.

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The magnitude and severity of both extreme heat and cold events are further categorized by their duration, intensity, and the extent of their impact on health, infrastructure, and the local economy. Events are ranked as limited, moderate, or severe depending on their overall reach and effect on the planning area, with prolonged or particularly intense events being classified as more severe. Historical records, such as the highest or lowest temperatures and the duration of extreme events, are used to inform the planning area's mitigation strategies and future preparedness efforts.

The NWS Quad Cities, IA/IL issues warnings and advisories for extreme temperatures. The following is a breakdown of the various NWS defined watches, warnings, and advisories that could be issued:

- Excessive Heat Warning - When conditions are observed or anticipated for heat index readings to 105° or higher and a minimum heat index of 75°+ both for at least a two day period or four days of expected peak heat index readings forecast at 100° or higher.
- Excessive Heat Watch - There is upcoming potential for heat index readings to 105° or higher for at least a two day period or four days of expected peak heat index readings forecast at 100° or higher.
- Heat Advisory - Maximum heat index is expected to exceed 100°.
- Extreme Cold Warning - Widespread dangerous temperatures and/or wind chill values around -30° or colder are expected.

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- Extreme Cold Watch - Widespread dangerous temperatures and/or wind chill values around -30° or colder are possible.
- Freeze Watch - Widespread temperatures below freezing are possible during the growing season.
- Cold Weather Advisory - Widespread temperatures and/or wind chill values around -20° to -30° are expected.
- Frost Advisory - Widespread temperatures of 33 to 36 degrees with favorable conditions for frost are expected during the growing season.

3.4.9.4 Past Occurrences

According to historical records for the planning area, there have been numerous periods with temperatures of 90 degrees or higher since the late 19th century, reflecting a trend of increasingly hot summers. Over the past several decades, the planning area has experienced more frequent and extended heatwaves, including streaks of consecutive days with temperatures above 90°F. For example, in the summer of 2012, the planning area experienced one of the hottest summers on record, with prolonged periods of extreme heat. Temperatures soared above 100°F multiple times, breaking previous records for high temperatures in July and August.

In more recent years, extreme heat events have continued to become more common. During the summer of 2020, the planning area recorded an exceptionally high number of days with temperatures at or above 90°F, reflecting a regional trend of rising average temperatures. This increase in extreme heat events has heightened concerns over public health, agricultural impacts, and the resilience of local infrastructure. Similar to broader climate patterns observed across the Midwest, the average annual temperature in the planning area has shown a gradual increase over time, contributing to more frequent extreme heat conditions.

By contrast, the planning area experiences a significant number of cold days annually. On average, the planning area records approximately 150 days per year with minimum temperatures at or below 32°F, reflecting its typical Midwestern climate. Additionally, the area averages around five to six days annually where temperatures drop below 0°F. These cold snaps, often occurring in the winter months, can lead to hazardous conditions, including frozen pipes, hazardous roads, and increased health risks for vulnerable populations. Similar to other parts of the Midwest, the planning area's cold weather extremes are a regular aspect of its climate, requiring preparedness measures for both residents and local infrastructure. The rising trend in extreme cold events, particularly during polar vortex incidents, underscores the importance of effective cold-

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weather mitigation and response strategies. The following are some historical examples of extreme temperatures:

- July 1936: During the Great Plains heatwave, temperatures in the region soared above 110°F, leading to widespread crop failure, livestock deaths, and numerous heat-related illnesses and fatalities. This event was part of the Dust Bowl era, which caused severe agricultural damage across Iowa and other Midwestern states.
- January 12, 1974: A cold wave brought temperatures in Iowa to as low as -25°F, with wind chill factors making it feel much colder. The extreme cold caused frozen pipes, power outages, and dangerous travel conditions, particularly impacting rural areas with long emergency response times.
- February 1996: An intense cold wave gripped the region, with temperatures in the planning area plummeting to -30°F. Schools were closed, water pipes froze, and frostbite warnings were issued as residents struggled to stay warm. Wind chills dropped as low as -50°F in some areas.
- July 18-23, 2011: A severe heat wave affected the Midwest, with heat index values exceeding 110°F. In the planning area, the high temperatures led to heat advisories and warnings, along with emergency measures such as opening cooling centers. Livestock deaths and agricultural losses were also reported due to heat stress.
- January 29-31, 2019: A polar vortex caused extreme cold temperatures across the Midwest, with wind chills in the planning area reaching -50°F. The cold snap led to school and business closures, and residents were advised to limit outdoor exposure due to the high risk of frostbite and hypothermia.

3.4.9.5 Likelihood of Future Occurrence

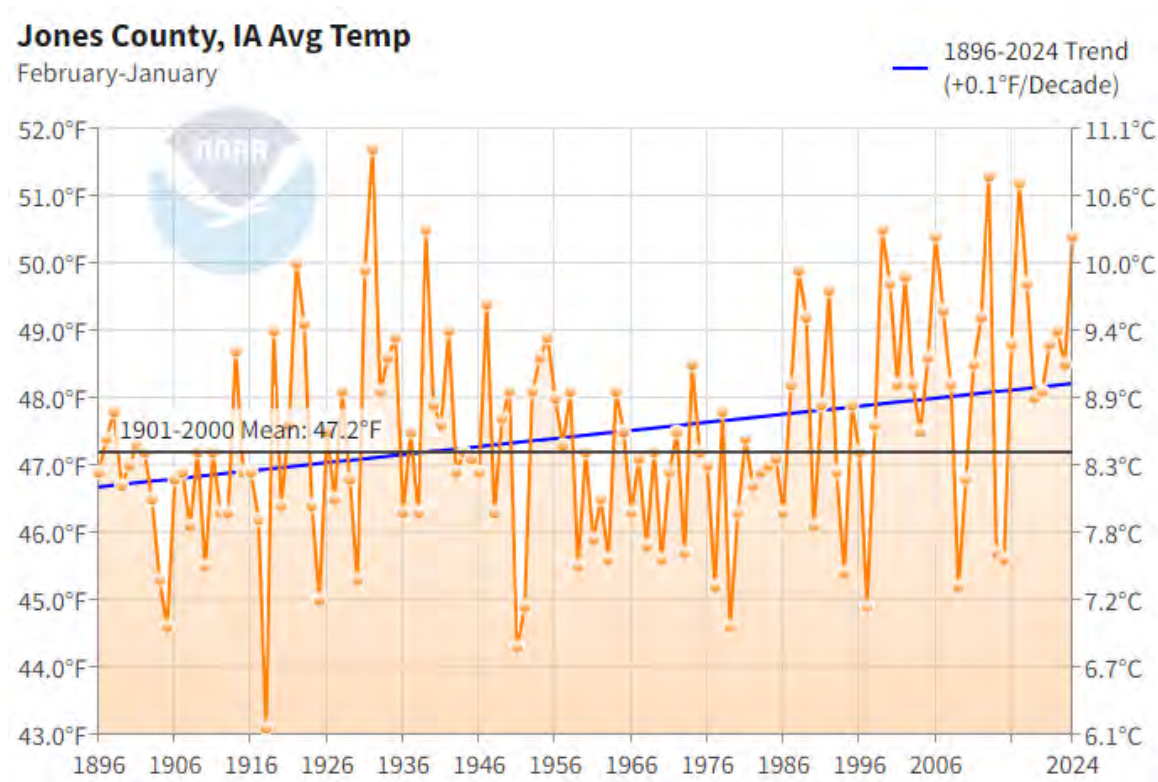
Future extreme temperature events in the planning area is considered high, based on local, regional, and state climate trends. Historical data for the planning area indicates a steady increase in both the frequency and intensity of extreme heat events. Iowa, like much of the Midwest, has experienced more frequent heat waves in recent decades, and climate models suggest this trend will continue. Rising average temperatures and more prolonged periods of heat, particularly in the summer months, point to a higher probability of future extreme heat events.

Similarly, extreme cold events are likely to persist, particularly in the winter months when cold snaps and polar vortexes can drive temperatures well below 0°F. Although there is a general warming trend, severe cold weather remains a periodic risk due to shifting polar air masses and regional weather patterns. The state of Iowa regularly experiences harsh

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winter conditions, and the planning area, with its rural and agricultural landscape, is especially vulnerable to cold spells.



In both cases—extreme heat and extreme cold—the likelihood of future occurrences is influenced by broader climate patterns that affect the region. As such, the planning area must remain prepared for continued exposure to temperature extremes, requiring ongoing mitigation and adaptation efforts.

3.4.9.6 Climate Change Considerations

While extreme temperatures are influenced by natural climate variability, climate change considerations play a significant role in understanding the evolving risk of this hazard. Climate change is contributing to an increase in the frequency, intensity, and duration of extreme heat events in the planning area, as global warming raises average temperatures and leads to more frequent heatwaves. Warmer summers and extended periods of high temperatures are anticipated to become more common due to greenhouse gas emissions and other human activities that contribute to global warming. On the other hand, while extreme cold events may still occur, they are expected to become less frequent in the long term as average winter temperatures increase.

However, the occurrence of severe cold spells, such as those caused by shifting polar vortexes, may still be significant and unpredictable.

Therefore, climate change is an important factor to consider in the planning area's future risk of extreme temperatures, despite this hazard not traditionally being classified as a natural disaster. The impacts of a changing climate on temperature extremes require adaptive strategies in local planning, infrastructure resilience, and community preparedness to address the growing challenges posed by more frequent extreme heat and the potential for severe cold events.

3.4.9.7 Vulnerability

People

During extreme heat events, vulnerable and underserved populations would face heightened risks of heat-related illnesses, such as heat exhaustion and heat stroke. Older adults, young children, individuals with disabilities (13.1%), and those with chronic health conditions would be particularly susceptible to extreme temperatures. Low-income households (11.4%) and renters who lack access to air conditioning or cannot afford increased energy costs would face significant challenges in staying cool. Residents in rural areas or those without personal transportation (1.4% of households) may have difficulty accessing cooling centers or emergency relief services if power outages occur due to increased energy demand.

In extreme cold events, underserved populations would also be at greater risk of frostbite, hypothermia, and other cold-related health complications. Households relying on older or inefficient heating systems, particularly low-income families, seniors, and individuals with disabilities, may struggle to maintain safe indoor temperatures. Frozen water pipes and power outages could disproportionately impact those living in mobile homes (5.14%) or inadequate housing, where insulation may be poor. Those who depend on electric-powered medical devices would be particularly vulnerable to energy disruptions, making access to warming shelters or backup power sources critical for survival.

Rural and isolated areas of the planning area could experience delays in emergency response during extreme weather, further increasing risks for those unable to seek shelter, access medical care, or secure alternative heating or cooling options. Ensuring equitable access to cooling and warming centers, emergency assistance, and public health outreach would be essential in mitigating the disproportionate burden on at-risk populations during both extreme heat and cold events.

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Economy

During extreme heat events, the agriculture sector, which is a major part of the local economy, would be particularly vulnerable. High temperatures can damage crops, reduce yields, and cause stress or death to livestock, leading to financial losses for farmers. Additionally, increased energy consumption due to air conditioning demands could lead to higher operational costs for businesses, especially if power outages occur. Infrastructure, such as roads and buildings, could also suffer heat-related damage, leading to costly repairs. Tourism and outdoor events may be disrupted or canceled, impacting local businesses that rely on seasonal activities.

In extreme cold events, agriculture would again face challenges, with livestock being particularly vulnerable to cold stress and potential crop damage during extended freezing periods. Frozen water pipes and utility disruptions could lead to costly repairs for businesses and residents alike. Extreme cold can also slow down or halt transportation and supply chains, delaying deliveries and reducing productivity, particularly in industries dependent on timely shipping or outdoor labor. Increased heating costs for both businesses and households could strain local economies, and emergency repairs due to cold-related infrastructure damage, such as burst pipes, would add additional financial burdens.

Built Environment

General Property

During extreme heat events, prolonged periods of high temperatures can stress infrastructure and buildings, particularly older homes and commercial properties. Consistent exposure to heat can lead to damage to roofing, siding, and roadways, requiring costly repairs. Properties that lack adequate cooling systems or energy-efficient features may become less desirable, potentially lowering their market value. Additionally, the agricultural sector may experience long-term impacts, as heat-related crop failures or livestock losses could reduce the value of farmland, particularly if such events occur repeatedly.

In extreme cold events, property damage related to frozen water pipes, burst pipes, or damage to heating systems could lead to costly repairs, potentially reducing property values if such damage becomes widespread or repetitive. Homes that are not properly winterized or insulated may become less attractive to potential buyers, who may be deterred by the costs of upgrading or maintaining these properties during cold weather.

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Infrastructure failures, such as road damage from freezing and thawing cycles, could further impact the perceived value of properties in areas where maintenance is delayed or inadequate.

Repeated extreme temperature events could create a perception of increased risk in the planning area, leading to higher insurance costs and potential decreases in overall property demand, affecting market values in both residential and agricultural sectors.

Critical Infrastructure

During extreme heat events, the power grid would likely experience increased demand due to the widespread use of air conditioning, which could lead to power outages, particularly during prolonged heatwaves. Overloaded power systems could affect critical services, including healthcare facilities, emergency services, and water treatment plants. Roads, bridges, and rail systems may also suffer heat-related damage, such as buckling or warping, which could disrupt transportation and emergency response efforts. Telecommunications infrastructure could also face strain, especially if heat causes equipment failure or increases demand for services.

During extreme cold events, critical infrastructure is equally vulnerable. Prolonged periods of freezing temperatures can lead to water pipes bursting, both in private residences and key facilities such as hospitals and schools, leading to water outages and costly repairs. Power outages may occur due to increased heating demands, particularly in rural areas, and frozen or damaged power lines can further disrupt electricity supply. Transportation networks, including roads and bridges, could become hazardous due to ice and snow accumulation, hampering emergency response and supply chain operations. Additionally, wastewater treatment and water supply systems could freeze or malfunction, disrupting access to clean water and sewage management.

Historical, Cultural, and Natural Environment

Prolonged extreme heat could accelerate the deterioration of historical buildings, monuments, and artifacts in the planning area. Materials such as wood, brick, and metal may expand, crack, or degrade due to sustained high temperatures, leading to structural damage or loss of integrity in historic buildings like the Anamosa State Penitentiary, the Monticello Heritage and Cultural Center, and the Grant Wood Art Gallery in Stone City. Additionally, museums, libraries, and archives that house important cultural and historical documents or artifacts, such as the Wyoming Historical Museum and the Edinburgh Pioneer Village, may face increased risks if climate control systems fail during heatwaves, potentially leading to deterioration of fragile materials. In extreme cold, older structures

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without adequate insulation or heating could experience damage from frozen pipes, cracking foundations, or structural stress caused by freezing and thawing cycles, potentially leading to long-term deterioration.

Extreme heat events can also significantly impact the natural environment, particularly ecosystems, wildlife, and water resources. Heat stress can damage native plant species, reduce biodiversity, and disrupt the local ecology, particularly in agricultural areas dependent on stable growing conditions. Prolonged heat can also stress rivers, lakes, and wetlands through increased evaporation, potentially affecting water quality and availability for wildlife in areas such as Wapsipinicon State Park, Pictured Rocks County Park, and Indian Bluffs State Preserve. Reduced water levels in the Wapsipinicon River and its tributaries could disrupt fish populations and aquatic habitats, while extreme heat can also increase wildfire risk in dry grasslands and forested areas.

During extreme cold events, prolonged freezing temperatures can harm local wildlife, especially species not well-adapted to harsh conditions. Freezing temperatures may also damage vegetation and disrupt natural water cycles, as frozen water bodies can impact fish and other aquatic life. Areas such as the Hale Wildlife Area and Whitewater Canyon Wildlife Area, which support diverse plant and animal life, may experience vegetation loss, animal die-offs, and ecosystem imbalances due to extreme cold. Additionally, historic agricultural sites and barns, which may lack modern insulation, could suffer structural damage or losses of heirloom crops and livestock during prolonged cold snaps.

Both extreme heat and cold can affect the planning area's ability to preserve its historical and cultural heritage, as well as its natural ecosystems. Protective measures, such as climate-controlled storage for historical artifacts, enhanced building insulation for older structures, and conservation efforts for natural resources, are critical to reducing these impacts and maintaining the integrity of Jones County's historical, cultural, and environmental assets.

Future Land Use and Development

If extreme temperature events, such as extreme heat or extreme cold, were to occur in the planning area, they could significantly influence future land use and development. Development practices would likely prioritize building resilient infrastructure capable of withstanding both high and low temperature extremes. This might include designing energy-efficient buildings with materials that can resist damage from heat and cold, as well as enhancing insulation and heating or cooling systems to ensure durability during temperature fluctuations.

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Urban planning would likely incorporate more green spaces to reduce the urban heat island effect during extreme heat, while also considering infrastructure upgrades that prevent damage from freezing conditions, such as roads and bridges built with materials that endure freeze-thaw cycles. Agriculture may also face shifts in land use, with changes in crop viability due to extreme temperatures prompting the repurposing of agricultural land for alternative uses, including renewable energy installations like solar farms.

Zoning regulations and land use policies may evolve to encourage development that enhances community resilience, ensuring that housing and public infrastructure can endure temperature extremes while meeting the growing need for emergency services and shelters during both extreme heat and cold events. These adaptations would foster long-term sustainability and climate resilience throughout the planning area.

3.4.9.8 Consequence Summary

An extreme temperature event in the planning area would have significant consequences for public health, infrastructure, and the local economy. Prolonged heat could strain the power grid, leading to outages that affect critical services like healthcare, cooling systems, and water supply, while cold events could cause frozen pipes, road hazards, and increased heating demands. Both extremes would impact vulnerable populations, such as the elderly and those without proper shelter, while also placing stress on agricultural operations due to crop damage or livestock losses. The local economy could suffer from disruptions in transportation, power failures, and repair costs to damaged infrastructure, with long-term recovery efforts required to mitigate the event's effects on residents and essential services.

Category	Narrative
Impact on the Public	- Increased health risks such as heat stroke, dehydration, frostbite, and hypothermia. - Vulnerable populations, like the elderly and low-income residents, are at higher risk. - Limited access to essential services like cooling centers or heating during power outages.
Impact on the Economic Condition of the Planning Area	- Agricultural losses due to crop failure and livestock deaths. - Increased energy costs for heating or cooling. - Business disruptions due to power outages and infrastructure damage.

Category	Narrative
Impact on the Historical, Cultural, and Natural Environment	• Deterioration of historical buildings and artifacts due to extreme temperatures. • Damage to native plant species and local ecosystems. • Increased strain on conservation efforts to preserve natural and cultural sites.
Impact on Built Environment, General Property, and Critical Infrastructure	• Decreased property values due to frequent repairs or structural damage. • Damage to roads, bridges, and utilities from heat or freeze-thaw cycles. • Increased maintenance costs for critical infrastructure.
Impact on the Public Confidence in Government	• Loss of trust in local authorities if response to extreme temperatures is inadequate. • Public dissatisfaction with delays in restoring power, water, or other essential services.
Impact on Responders	• Increased strain on emergency personnel during extreme weather. • Longer response times due to hazardous travel conditions. • Higher risk of responder fatigue and equipment failure.
Impact on continuity of operations, including continued delivery of government services	• Disruptions in government services like water, power, and emergency response. • Challenges in maintaining public safety and health services during outages. • Potential delays in critical decision-making and response coordination.
Cascading hazards	• Power outages leading to water and communication failures. • Transportation disruptions due to road damage or dangerous conditions. • Increased fire risk during extreme heat or frozen pipes leading to flooding during extreme cold.

3.4.10 Flash Flooding

Probability	Population Impact	Property Impact	Economy Impact	Overall Hazard Ranking
2.44	2.00	2.19	1.94	14.96

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3.4.10.1 Description

Flash flooding is a rapid and intense form of flooding that occurs when heavy rainfall overwhelms the capacity of the ground or drainage systems to absorb water, causing water to accumulate quickly in a short period of time. This type of flooding typically develops within minutes to hours of a heavy rainfall event, making it particularly dangerous due to the lack of warning and the speed at which it occurs. Flash floods are most commonly caused by thunderstorms or other weather systems that produce significant rainfall over a concentrated area. The water can rise rapidly, sometimes reaching heights of 30 feet or more, and is capable of sweeping away vehicles, uprooting trees, and destroying buildings and infrastructure. Unlike river flooding, which occurs over a larger area and more gradually, flash floods are highly localized, often affecting areas with poor drainage, steep terrain, or urban environments where impervious surfaces like concrete prevent water from being absorbed. The sudden nature of flash floods poses a significant risk to life and property, as people and communities have little time to prepare or evacuate.

3.4.10.2 Location

In the planning area, several locations are particularly susceptible to flash flooding due to geographic features and drainage patterns. Areas near the Wapsipinicon River and its tributaries are at risk, especially low-lying regions where sudden heavy rainfall can overwhelm smaller streams and drainage systems, leading to rapid water accumulation. Urban areas, such as Anamosa and Monticello, are also vulnerable due to the prevalence of impervious surfaces like roads, parking lots, and buildings, which prevent water from being absorbed quickly during intense rainstorms. This results in increased surface runoff and localized flash flooding. Rural areas with poor drainage systems face similar risks, as water can pool in fields and along roads when intense rainfall occurs. Additionally, locations with steep terrain or valleys are prone to flash flooding as rainfall can quickly flow down slopes and collect in low-lying areas, increasing the risk of sudden flooding. Understanding these vulnerable spots is crucial for mitigating flash flood risks in the planning area.

Applicable Jurisdictions	
Unincorporated Jones County	City of Oxford Junction
City of Anamosa	City of Wyoming
City of Martelle	Anamosa CSD
City of Monticello	Midland CSD
City of Morley	Monticello CSD
City of Olin	Olin CSD
City of Onslow	Sacred Heart School

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Applicable Jurisdictions

St. Patrick School

Applicable **Not Applicable**

3.4.10.3 Magnitude/Severity

The magnitude and severity of flash flooding in the planning area are measured based on several key factors. One of the primary indicators is the intensity and duration of rainfall, as flash floods are often triggered by heavy rain over a short period. When rainfall exceeds the ground's ability to absorb water or the capacity of drainage systems, flash floods can occur. Another critical measure is the rate of water rise in local streams, creeks, and drainage systems, with rapidly rising water being a hallmark of severe flash floods. The extent of the area affected also influences the severity, with larger, more widespread flash floods causing more significant damage, especially in urban areas. Damage potential is another key factor, as flash floods can destroy roads, infrastructure, and buildings, particularly in vulnerable areas. Finally, the speed of onset is a major consideration, as flash floods often develop quickly, leaving little time for warning or preparation, which increases the danger to people and property.

3.4.10.4 Past Occurrences

Examining past occurrences of flash flooding, both within and outside the planning area, provides valuable insights that help the planning area better prepare for future incidents. Historical events demonstrate how rapidly flash floods can develop and the severe impacts they can have on infrastructure, property, and public safety. While the specific examples may not always be localized to the planning area, they highlight common vulnerabilities, such as overwhelmed drainage systems and low-lying areas, and reinforce the importance of timely emergency response and preparedness. By learning from these past events, the planning area can implement mitigation strategies, improve warning systems, and bolster community resilience against future flash flooding hazards. Examples of previous major flash flooding incidents include, but are not limited to:

- June 9, 2008 (Cedar Rapids, Iowa): Flash flooding from heavy rain in the Cedar River watershed caused rapid water rise in Cedar Rapids, leading to the evacuation of thousands of residents. It was one of the worst floods in Iowa history, with flash flooding causing damage to homes, businesses, and critical infrastructure before the river flooding that followed.
- August 24, 2016 (Decorah, Iowa): Heavy thunderstorms brought over 7 inches of rain in a few hours, resulting in flash flooding that washed out roads, flooded homes, and caused extensive agricultural damage. Several highways were closed,

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and numerous rescue operations were needed for residents trapped by rising waters.

- June 29, 2014 (Rock Valley, Iowa): A flash flood event triggered by intense rainfall led to significant damage in Rock Valley, with numerous homes flooded and infrastructure severely impacted. Local officials declared a state of emergency as the rapidly rising water overwhelmed drainage systems.
- September 12, 2010 (Ames, Iowa): Flash flooding in Ames was caused by a combination of heavy rainfall and overwhelmed drainage systems. The event caused damage to infrastructure, including roads and bridges, and led to the temporary closure of Iowa State University.
- July 23, 2010 (Dubuque, Iowa): A flash flood event occurred after up to 10 inches of rain fell in just a few hours. The resulting flood caused widespread damage to roads, homes, and businesses, with some areas submerged under several feet of water. Several rescues were performed as residents were trapped by the rapidly rising water.

3.4.10.5 Likelihood of Future Occurrence

Future flash flooding occurrences in the planning area is considered moderate to high due to several contributing factors. The planning area's geographic features, including the presence of the Wapsipinicon River and its tributaries, combined with increasingly frequent and intense rainfall events, make the area susceptible to flash floods. As climate patterns shift, the Midwest, including the planning area, is expected to experience more extreme weather events, including heavy rainfall that can overwhelm local drainage systems and cause flash flooding. Given historical occurrences and trends in the region, it is reasonable to expect that flash flooding will remain a recurring hazard in the planning area, especially during periods of intense storms. Therefore, ongoing preparedness and mitigation efforts are essential to reducing future risks.

3.4.10.6 Climate Change Considerations

Climate change considerations are relevant to the hazard of flash flooding in the planning area, as changes in weather patterns are expected to influence the frequency and intensity of heavy rainfall events. While flash flooding itself is not traditionally classified as a natural hazard caused directly by climate change, the increasing likelihood of intense storms due to warmer atmospheric conditions can exacerbate the risk. Warmer air holds more moisture, leading to heavier downpours, which can overwhelm drainage systems and cause flash floods more frequently. Additionally, shifts in seasonal weather patterns may lead to more unpredictable and concentrated rainfall events. As a result, flash flooding is likely to become more frequent and severe in the planning area.

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as climate change progresses, requiring proactive mitigation strategies and infrastructure improvements to handle the increased risk.

3.4.10.7 Vulnerability

People

The impacts of flash flooding on the general population could be severe, with vulnerable and underserved populations at heightened risk. Flash floods develop rapidly, leaving little time for warning or evacuation, which increases the danger for individuals with limited mobility, disabilities (13.1%), or lack of personal transportation (1.4% of households) who may struggle to evacuate quickly. Residents living in low-lying or flood-prone areas, particularly those in older homes or mobile housing (5.14%), may experience significant damage or displacement, further exacerbating hardships for low-income families (11.4% below the poverty line) who may lack financial resources for recovery.

The disruption of essential services caused by flash flooding could disproportionately impact older adults, individuals with disabilities, and those with chronic medical conditions who rely on consistent access to healthcare, utilities, and transportation. Power outages and flooded roads may prevent emergency services from reaching isolated or rural areas, leaving vulnerable residents stranded without immediate assistance. School closures or service disruptions may further strain single-parent households or low-income families who depend on school-based meal programs and childcare services for daily stability.

The sudden and severe nature of flash floods poses a high risk to public safety, particularly for those already facing barriers to emergency preparedness and disaster response. Without targeted equity-focused mitigation efforts, including improved early warning systems, accessible evacuation routes, and post-disaster housing assistance, underserved populations will continue to face disproportionate challenges in surviving and recovering from flash flood events.

Economy

The economic impacts could be substantial. Flood damage to homes, businesses, and infrastructure would lead to costly repairs and disruptions in daily operations. Businesses, particularly those in flood-prone areas, may face temporary or even permanent closures due to property damage or loss of inventory. The agricultural sector, a significant part of the local economy, could experience crop damage and soil erosion, reducing

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productivity and causing financial strain for farmers. Additionally, flash floods could damage roads, bridges, and public infrastructure, leading to expensive repairs and delays in transportation and commerce. Recovery efforts, including cleanup and rebuilding, would place further financial burdens on local governments and residents, potentially leading to increased insurance premiums and long-term economic recovery challenges for the planning area.

Built Environment

General Property

Homes and businesses in Jones County, Iowa, that experience repeated flooding or severe damage face challenges in marketability and value retention. Properties in areas identified as high-risk for flash flooding may attract reduced buyer interest due to concerns over future flood-related damages and rising insurance costs. For structures insured under the National Flood Insurance Program (NFIP), repeated flood damage can lead to increased premiums, which may further deter potential buyers. Over time, these impacts contribute to a depreciation in property values, especially for buildings situated near waterways or in low-lying areas prone to frequent flood events. This depreciation not only creates financial strain for property owners but also affects the broader housing market in the planning area, emphasizing the need for effective mitigation strategies.

Critical Infrastructure

Roads and bridges may be washed out or severely damaged, disrupting transportation and making it difficult for emergency services to reach affected areas. Water treatment plants, sewage systems, and power lines could also be overwhelmed or damaged by floodwaters, leading to temporary outages in water, electricity, and sanitation services. Communication networks, such as cell towers and internet service providers, might experience disruptions, limiting the ability to coordinate emergency responses and provide information to the public. Public facilities, including hospitals, schools, and emergency shelters, could be affected if they are located in flood-prone areas, complicating rescue and recovery efforts. The damage to critical infrastructure would not only hinder immediate response efforts but also result in costly repairs and long-term recovery challenges for the planning area.

Historical, Cultural, and Natural Environment

Historical, cultural, and natural environments could be significantly affected by flash flooding. Historical sites and buildings, particularly those near waterways or in low-lying

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areas, could suffer structural damage, erosion, or complete destruction, leading to the loss of irreplaceable local heritage. Locations such as the Hale Bridge spanning the Wapsipinicon River, the Grant Wood Art Gallery in Stone City, and the historic district in Anamosa could be at risk if floodwaters rise rapidly. Older structures with weakened foundations or porous materials may experience water intrusion, foundation instability, or long-term moisture damage, accelerating deterioration.

Cultural institutions, such as the Anamosa State Penitentiary Museum, Monticello Heritage and Cultural Center, and Wyoming Historical Museum, may face damage to collections and records if floodwaters breach their facilities, potentially resulting in the loss of valuable historical artifacts. Additionally, archives and libraries that store historical documents, including county records housed at the Jones County Courthouse, could suffer irreversible damage if digital and physical preservation measures are inadequate.

The natural environment would also be severely impacted. Local ecosystems and wildlife habitats could suffer from soil erosion, sediment deposition, and the destruction of plant life, altering landscapes and negatively affecting biodiversity. Flash floods may wash away riparian vegetation, displace wildlife, and damage agricultural lands, affecting natural areas such as Wapsipinicon State Park, Pictured Rocks County Park, and Indian Bluffs State Preserve. These areas, which provide habitats for native species, may experience disruptions in food supply, nesting areas, and overall ecosystem stability.

Additionally, heavy sediment deposits and debris carried by floodwaters could alter the Wapsipinicon River and smaller tributaries, affecting water quality and aquatic life. Recreational areas along these waterways may become unsafe or unusable, leading to economic and cultural losses tied to outdoor tourism and conservation efforts.

The loss of natural areas, combined with damage to culturally significant sites, could diminish the planning area's historical and environmental resources, requiring costly restoration efforts. Long-term resilience planning, including flood mitigation measures, protective infrastructure, and conservation efforts, will be necessary to preserve Jones County's historical, cultural, and natural assets.

Future Land Use and Development

Areas that experience repeated flooding may be designated as high-risk zones, which could limit development or require stricter building codes and flood mitigation measures, such as elevating structures or improving drainage systems. Developers might avoid building in flood-prone areas due to the increased costs of flood-proofing buildings or obtaining flood insurance. Additionally, zoning regulations may shift to

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prioritize open spaces, green infrastructure, or flood retention areas to reduce future flooding risks. Agricultural land near flood-prone areas may also be impacted, with landowners potentially shifting to crops or land management practices that are more resilient to flooding. Overall, the planning area could see a reevaluation of land use priorities to focus on flood risk reduction and long-term sustainability in light of future flash flood threats.

3.4.10.8 Consequence Summary

The consequences of a flash flooding incident in the planning area could be severe, affecting public safety, the economy, infrastructure, and the environment. Rapidly rising waters would pose immediate threats to residents, particularly those in low-lying areas, leading to potential evacuations, injuries, or loss of life. Critical infrastructure, including roads, bridges, water treatment systems, and power supplies, could be damaged or rendered inoperable, disrupting essential services and emergency response efforts. Businesses and homes might experience significant damage, resulting in costly repairs and economic hardship for property owners and the broader community. The natural environment, including local ecosystems and agricultural land, could suffer from erosion and habitat destruction, while historical and cultural sites could be permanently damaged. The long-term effects of such an event would require substantial recovery efforts, impacting future land use and development.

Category	Narrative
Impact on the Public	- Increased risk of injury, loss of life, and displacement due to rapidly rising waters. - Evacuations and disruptions to daily life, particularly in low-lying areas.
Impact on the Economic Condition of the Planning Area	- Damage to businesses and farms, resulting in lost revenue and increased recovery costs. - Significant financial strain due to repairs and disruptions in local commerce.
Impact on the Historical, Cultural, and Natural Environment	- Damage or loss of historical buildings and artifacts. - Erosion of natural landscapes, damage to ecosystems, and destruction of wildlife habitats.
Impact on Built Environment, General Property, and Critical Infrastructure	- Decreased property values in flood-prone areas. - Severe damage to roads, bridges, water systems, and utilities, requiring costly repairs.
Impact on the Public Confidence in Government	Erosion of trust if emergency response and recovery efforts are perceived as inadequate.

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Category	Narrative
Impact on Responders	- Increased public demand for improved flood mitigation and preparedness measures. - Strain on emergency services, including delays in response due to damaged infrastructure. - Increased risk to responders working in hazardous flood conditions.
Impact on continuity of operations, including continued delivery of government services	- Disruptions to essential government services, such as water, power, and emergency management. - Challenges in maintaining public safety and administrative operations during recovery.
Cascading hazards	- Power outages, water contamination, and transportation failures. - Potential for landslides, further erosion, and weakened infrastructure following the flood event.

3.4.11 Hazardous Materials Incident (includes radiological)

Probability	Population Impact	Property Impact	Economy Impact	Overall Hazard Ranking
1.69	1.44	1.50	1.44	7.40

3.4.11.1 Description

A hazardous materials incident occurs when dangerous chemicals, substances, or radiological materials are accidentally released, posing risks to public health, the environment, and property. These incidents can result from transportation accidents, industrial spills, improper storage, or natural disasters. Hazardous materials include chemicals like gasoline, pesticides, industrial solvents, and biological agents, while radiological materials involve radioactive substances used in medical treatments, research, or energy production. When released, these substances can cause immediate health effects, such as burns, respiratory issues, or radiation exposure, and long-term impacts like cancer or environmental contamination. The severity of the incident depends on the type of material, the amount released, the proximity to population centers, and weather conditions that may spread the contamination. Emergency responders must act quickly to contain and neutralize hazardous materials, often requiring specialized equipment and protocols to prevent further harm to people and the environment. Public safety measures, such as evacuation or shelter-in-place orders, may be issued depending on the extent of the incident.



3.4.11.2 Location

In the planning area, hazardous materials incidents are most likely to occur near Tier 2 facilities, along transportation routes, and in proximity to pipelines and railroads. Tier 2 facilities—industrial and commercial sites that store or use significant quantities of hazardous chemicals—are required to report their chemical inventories, making them potential focal points for incidents. In the planning area, these facilities might include manufacturing plants, agricultural supply companies, and fuel storage sites, where accidental releases could pose serious risks to nearby communities, public health, and the environment.

Transportation routes through the county, such as U.S. Route 151 and Iowa Highway 1, also present significant risks, as hazardous materials are frequently transported by truck. A traffic accident involving a vehicle carrying hazardous chemicals could result in a spill or release, particularly in high-traffic areas or under adverse weather conditions. This could lead to localized contamination and pose immediate dangers to nearby populations.

Additionally, pipelines that carry oil, natural gas, and other chemicals traverse the planning area, creating another point of vulnerability for hazardous materials incidents. A pipeline rupture or leak could lead to the release of hazardous substances, affecting not only the surrounding communities but also water supplies and local ecosystems.

Railroads, which transport hazardous materials like chemicals and fuel, run through parts of the planning area as well. An accident or derailment involving these trains could result in significant contamination, affecting large areas and requiring extensive emergency response efforts. The combination of these risk factors underscores the importance of preparedness and coordination between local authorities, first responders, and facilities that handle hazardous materials to reduce potential impacts on the community.

Applicable Jurisdictions	
Unincorporated Jones County	City of Oxford Junction
City of Anamosa	City of Wyoming
City of Martelle	Anamosa CSD
City of Monticello	Midland CSD
City of Morley	Monticello CSD
City of Olin	Olin CSD
City of Onslow	Sacred Heart School
	St. Patrick School
Applicable	Not Applicable

3.4.11.3 Magnitude/Severity

The magnitude and severity of hazardous materials incidents, including those involving radiological materials, are measured based on several key factors that assess the potential risk to public health, property, and the environment.

1. **Type and Quantity of Material:** The chemical or radiological properties of the hazardous material involved are critical in determining the severity. Some chemicals may be highly toxic, flammable, or reactive, while radiological materials pose unique long-term health risks such as radiation exposure or contamination. The larger the quantity of the material released, the more severe the incident.
2. **Exposure Risk to the Public:** The severity of an incident is also measured by the potential for public exposure. This includes considering the proximity of the release to populated areas, schools, hospitals, or sensitive environments. If a large number of people are at risk of direct exposure to harmful chemicals or radiation, the severity increases significantly.
3. **Extent of the Release:** The size and scope of the release are critical in assessing severity. A contained spill inside a facility may have limited impacts, while an uncontrolled release into the environment, such as into air, water, or soil, can spread the hazard over a larger area, affecting more people and ecosystems.
4. **Response Time and Containment:** How quickly emergency responders can contain the hazardous material plays a crucial role in determining the overall severity of the incident. If the material is contained rapidly, the impacts may be minimized. Delayed response or difficulty in controlling the release, particularly in the case of a pipeline rupture or transportation accident, increases the magnitude of the incident.
5. **Secondary Effects:** Incidents involving hazardous materials may lead to cascading effects, such as fires, explosions, or the long-term contamination of water supplies and soil. These secondary effects greatly increase the severity of the event, as they complicate response efforts and extend the duration of the impact.
6. **Duration of Exposure:** The length of time that hazardous materials remain in the environment or continue to pose a threat also factors into severity. For example, radiological materials with long half-lives can remain hazardous for extended periods, necessitating long-term clean-up and containment.

3.4.11.4 Past Occurrences

Examining past occurrences of hazardous materials incidents, both locally and regionally, helps the planning area better prepare for future events. These historical examples provide insight into the various causes, such as transportation accidents, facility

malfunctions, or natural disasters, and demonstrate the potential impacts on public health, the environment, and infrastructure. Although some of the incidents may not be localized to the planning area, reviewing these events allows emergency planners to understand the risks associated with hazardous materials, improve response strategies, and implement stronger safety measures. By learning from past events, the planning area can enhance its preparedness and reduce the potential consequences of future hazardous materials incidents.

- July 18, 2019 (Dubuque, Iowa): A train derailment involving cars carrying ethanol occurred near the Mississippi River. The derailment caused multiple railcars to catch fire and prompted an extensive emergency response to prevent further environmental contamination, particularly the risk of ethanol entering the river.
- October 25, 2007 (Hartford, Illinois): A pipeline explosion in Hartford resulted in a massive fire that destroyed several homes and forced the evacuation of nearby residents. The explosion was caused by gasoline vapors leaking from underground pipes, igniting a fire that lasted several hours.
- June 22, 2008 (Cedar Rapids, Iowa): During the 2008 floods, hazardous materials stored in businesses and industrial facilities were released into floodwaters, contaminating local rivers and surrounding areas. The incident led to environmental concerns as floodwaters carried oil, chemicals, and other contaminants throughout the city.
- February 15, 1999 (Bourbonnais, Illinois): A freight train carrying hazardous materials collided with a semi-truck at a crossing, causing a major derailment. The incident led to several chemical spills, including the release of highly flammable materials, which ignited fires that destroyed multiple train cars.
- July 28, 1993 (Des Moines, Iowa): A hazardous chemical spill occurred when a truck carrying anhydrous ammonia overturned on a highway near Des Moines. The chemical release caused the evacuation of nearby residents and led to respiratory issues for those exposed, requiring an extensive clean-up and medical response.

The following analyzes hazardous materials spills in the planning area based on data provided by the Iowa Department of Natural Resources (DNR). This analysis covers incidents from the last 20 years, spanning from 2003 to 2023. The data includes various types of spills, such as agricultural chemicals, petroleum products, manure, and transformer oils, with examples ranging from small leaks to large-scale releases. These spills primarily occurred during transportation, storage, or handling operations. By reviewing this information, we can better understand the types of hazardous materials incidents that have occurred, assess their impacts on the environment and public health, and develop strategies to mitigate future risks in the planning area.

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1. **Agricultural Chemicals:** A significant number of spills involved fertilizers and pesticides, particularly anhydrous ammonia. The largest spill of this type occurred on May 6, 2019, when 1,000 gallons of anhydrous ammonia were released during a handling and storage incident. Such spills pose serious risks to air quality, public health, and nearby ecosystems, especially in agricultural settings.
2. **Petroleum Products:** Diesel fuel and gasoline spills occurred frequently, often during transportation. The largest incident occurred on May 7, 2008, when 500 gallons of diesel fuel were spilled. Petroleum spills primarily affect land and water, requiring extensive cleanup efforts to prevent environmental damage, particularly to surface water sources.
3. **Manure Spills:** Incidents involving manure were also significant, as manure spills can lead to nutrient pollution in waterways. The largest spill in this category occurred on October 16, 2012, with 4,000 gallons of manure released, posing a substantial risk to local water bodies and ecosystems.
4. **Transformer Oil:** Spills of transformer oil, some containing PCBs, are common, particularly from electrical utility operations. The largest spill of transformer oil took place on June 25, 2005, releasing 27 gallons of non-PCB transformer oil. Although small in volume, spills like this can have long-term environmental impacts if not properly managed.
5. **Surface Water Impact:** Some spills, such as those involving petroleum and manure, directly impacted surface water, increasing the risk of contamination. These incidents require rapid response to mitigate potential harm to ecosystems and public water supplies.

3.4.11.5 Likelihood of Future Occurrence

Future hazardous materials incidents in the planning area is considered moderate to high based on local, regional, and state trends. The planning area has several Tier 2 facilities that store or handle significant quantities of hazardous chemicals, making them potential sources of future incidents. Additionally, major transportation routes, such as U.S. Route 151, pipelines, and railroads that cross through the county, are frequently used to transport hazardous materials, increasing the risk of accidents that could result in spills. Regionally, Iowa and the Midwest have experienced a number of hazardous materials incidents related to agriculture, industrial activity, and transportation, suggesting that similar events could continue to occur. As the county remains agriculturally and industrially active, with ongoing transport of chemicals, the potential for spills during handling, transport, or storage is an ongoing concern. The presence of various facilities, combined with the transport of hazardous materials through the area, means that future incidents are possible and must be prepared for through safety measures and emergency planning.

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3.4.11.6 Climate Change Considerations

For hazardous materials incidents, climate change considerations are minimal because these events are not directly driven by natural climate processes. However, there are indirect factors related to climate change that could increase the risk or exacerbate the consequences of such incidents. For example, more frequent and severe weather events, such as floods, storms, or extreme temperatures, can disrupt transportation routes or damage facilities where hazardous materials are stored, increasing the likelihood of spills or releases. Additionally, changes in weather patterns could impact infrastructure resilience, such as pipelines or chemical storage, making them more vulnerable to incidents. While climate change is not a primary driver of hazardous materials incidents, it can contribute to conditions that heighten the risk of accidents, particularly during extreme weather events, which underscores the need for preparedness and resilience in emergency planning.

3.4.11.7 Vulnerability

People

The impact of a hazardous materials incident, including radiological events, on the general population could be severe, with vulnerable and underserved populations facing the greatest risks. Residents in close proximity to Tier 2 facilities, transportation routes, or railways could experience immediate health threats, such as respiratory issues, chemical burns, or exposure to toxic substances, depending on the material released. Individuals with pre-existing health conditions, such as respiratory illnesses or weakened immune systems, would be particularly susceptible to toxic exposure. In the case of a large-scale release or radiological incident, evacuation orders may be issued, disproportionately impacting low-income households (11.4%) and individuals without personal transportation (1.4%), who may struggle to relocate quickly or secure alternative shelter.

Children, older adults, and individuals with disabilities (13.1%) would face heightened risks during both the exposure and evacuation phases. Those in assisted living facilities or group quarters may experience delayed or complicated evacuations, increasing their likelihood of exposure. A hazardous materials release could also lead to long-term contamination of air, soil, or water supplies, disproportionately affecting rural residents who rely on well water and low-income communities with fewer resources to mitigate exposure or relocate if necessary. Limited English proficiency (0.4%) could create further barriers to understanding emergency instructions and accessing recovery assistance.

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First responders and emergency personnel would also be at heightened risk while managing the incident, potentially straining local emergency services and delaying assistance to underserved communities. Without equitable access to protective measures, timely evacuation assistance, and long-term health monitoring, vulnerable populations may suffer prolonged health consequences and greater difficulty recovering from the incident. Addressing language barriers, transportation access, and medical support for at-risk residents will be critical in minimizing disproportionate impacts on underserved groups.

Economy

The economic impacts could be substantial. Businesses, particularly those near the spill site or dependent on transportation routes, could experience disruptions due to evacuation orders, road closures, or direct damage to their property. This could lead to temporary or permanent closures, lost revenue, and increased operational costs. The agricultural sector, a key component of the local economy, could also be severely impacted if hazardous materials contaminate soil, water sources, or livestock. Cleanup and remediation efforts would be costly, potentially requiring significant financial resources from both public and private sectors. Additionally, property values could decline in areas affected by the incident, further straining the local economy. Overall, the economic recovery from such an event could take considerable time and effort, affecting businesses, industries, and the broader community.

Built Environment

General Property

If a hazardous materials incident were to occur in the planning area, property values could be negatively impacted, particularly in areas directly affected by the spill. Properties near the spill site, especially those in close proximity to Tier 2 facilities, transportation routes, or railways, could experience a decrease in market value due to contamination risks or perceived safety concerns. Long-term environmental damage, such as soil or water contamination, could deter potential buyers and make properties less desirable, leading to depreciation. Additionally, increased insurance premiums or difficulty obtaining coverage for properties in high-risk areas could further reduce demand and property values. The stigma associated with hazardous materials incidents could also affect the broader real estate market in the area, causing a decline in property values even beyond the immediate spill zone.

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Critical Infrastructure

Roads, bridges, and railways may be closed or damaged due to contamination, making transportation and emergency response more difficult. If hazardous materials spill near or into water treatment plants, power facilities, or communication networks, it could disrupt essential services like drinking water supply, electricity, and telecommunications. These disruptions would not only affect the immediate response but could also cause long-term outages, forcing the community to rely on backup systems, which may not be sufficient for prolonged periods. Additionally, infrastructure cleanup and repair could be costly and time-consuming, further straining local resources. Contaminated infrastructure could remain out of service for extended periods, affecting public safety, healthcare, and overall community resilience.

Historical, Cultural, and Natural Environment

Historical and cultural sites, such as landmarks, museums, and heritage buildings, could be damaged by exposure to hazardous substances, particularly if spills occur near these locations or in transportation corridors that pass through historic districts. Contamination from toxic chemicals, fuel spills, or radiological materials could lead to long-term degradation of materials or artifacts, some of which are irreplaceable. Locations such as the Anamosa State Penitentiary Museum, Grant Wood Art Gallery in Stone City, and the Edinburgh Pioneer Village could face airborne exposure, structural contamination, or access restrictions if a nearby hazardous materials incident occurs. Additionally, if hazardous spills or airborne pollutants affect indoor climate control systems, museums and libraries, such as the Wyoming Historical Museum and the Monticello Heritage and Cultural Center, could face deterioration of historical records, artworks, and documents due to chemical reactions or prolonged exposure.

The natural environment would also face considerable risks. Hazardous materials released into soil, water, or air could disrupt local ecosystems, harming wildlife and plant life. If contaminants enter rivers or streams, such as the Wapsipinicon River, Whitewater Creek, or Buffalo Creek, they could degrade water quality, harm aquatic life, and cause broader environmental damage downstream. Conservation areas such as Wapsipinicon State Park, Indian Bluffs State Preserve, and Hale Wildlife Area could see long-term soil and vegetation contamination, affecting native species and overall ecosystem balance.

Agricultural land, vital to the local economy, could be rendered unusable for a period of time due to contamination, impacting both local farmers and the surrounding environment. If a radiological incident or chemical spill occurs near farmland, crops could absorb harmful substances, leading to food supply concerns, economic losses,

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and long-term soil degradation. Additionally, livestock operations could be compromised if feed and water sources become contaminated, further affecting the county's agricultural sector.

Restoring affected areas would require extensive cleanup efforts, and in some cases, the natural landscape and cultural heritage might never fully recover. Implementing hazardous materials response plans, monitoring environmental impacts, and ensuring protective measures for historical sites will be essential in mitigating long-term consequences.

Future Land Use and Development

Areas affected by contamination, particularly near Tier 2 facilities, transportation routes, or railways, may face restrictions on future development due to environmental risks. Contaminated land might require extensive remediation before it can be safely used again, which could delay or discourage new construction or redevelopment. Zoning regulations may be adjusted to prevent certain types of development in high-risk areas, and developers may avoid investing in areas with a history of hazardous materials incidents due to liability concerns and higher insurance costs.

Additionally, if agricultural land is contaminated, it could lead to shifts in land use away from farming toward non-agricultural purposes, potentially impacting the county's rural character. Future development plans may prioritize safety measures, such as buffer zones around industrial or high-risk areas, to mitigate the risk of similar incidents. Overall, a hazardous materials incident could alter long-term planning and development priorities, with a stronger focus on minimizing risks and safeguarding public health and the environment.

3.4.11.8 Consequence Summary

A hazardous materials incident in the planning area could have widespread and severe consequences. Immediate impacts would include threats to public health, especially for those in close proximity to the spill, who could experience exposure to toxic chemicals, respiratory issues, or other health risks. Critical infrastructure, such as transportation routes, water supplies, and power systems, could be disrupted, leading to extended outages and difficulty accessing essential services. Local businesses, especially those near the incident, could face closures and financial losses, while property values may decline due to contamination concerns. The natural environment, including local waterways and agricultural land, could suffer long-term damage, affecting both

ecosystems and the economy. Additionally, cleanup and remediation efforts would be costly and time-consuming, further straining local resources and delaying recovery.

Category	Narrative
Impact on the Public	- Health risks from exposure to toxic substances, respiratory issues, or chemical burns. - Potential evacuations and displacement of residents in affected areas.
Impact on the Economic Condition of the Planning Area	- Business closures and financial losses, especially near the spill site. - Costs for cleanup and remediation, affecting local government and industry.
Impact on the Historical, Cultural, and Natural Environment	- Potential damage to historical and cultural sites due to contamination. - Long-term environmental harm to local ecosystems, waterways, and agricultural land.
Impact on Built Environment, General Property, and Critical Infrastructure	- Decreased property values in contaminated or high-risk areas. - Damage to transportation routes, water supplies, and power systems, requiring costly repairs.
Impact on the Public Confidence in Government	- Erosion of trust if response is perceived as inadequate or delayed. - Public demand for better regulations and safety measures around hazardous materials.
Impact on Responders	- Increased risk to first responders dealing with toxic exposure and hazardous environments. - Strain on emergency resources and personnel during containment and cleanup.
Impact on continuity of operations, including continued delivery of government services	- Disruptions to essential services such as water, power, and emergency management. - Delays in government functions and extended recovery periods.
Cascading hazards	- Water contamination, air quality issues, and long-term environmental degradation. - Potential fires or explosions if flammable materials are involved, leading to secondary hazards.

3.4.12 River Flooding

Probability	Population Impact	Property Impact	Economy Impact	Overall Hazard Ranking
2.25	1.63	1.81	1.75	11.68

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3.4.12.1 Description

River flooding occurs when rivers exceed their capacity due to heavy rainfall, rapid snowmelt, ice jams, or the failure of dams or levees, leading to the inundation of surrounding areas. This type of flooding can develop slowly over days or weeks, or rapidly in the case of intense storms or dam failures. Rivers carry the excess water downstream, potentially impacting entire watersheds. The consequences of river flooding can be severe, including widespread damage to homes, infrastructure, and agricultural land, as well as displacement of populations and disruption of essential services.

Several factors influence the severity of river flooding, including the terrain, soil absorption capacity, and urban development in flood-prone areas. In rural areas, river flooding can lead to erosion, loss of crops, and long-term damage to farmlands, while in urban regions, it can disrupt transportation, utilities, and cause extensive property damage. Furthermore, river flooding can contribute to secondary hazards, such as landslides or the contamination of water supplies. Efforts to mitigate river flooding often include levees, dams, floodplain management, and early warning systems to minimize damage and protect affected populations. Understanding and preparing for river flooding is essential, especially in areas with a history of high water events.

FEMA's Flood Insurance Rate Maps (FIRMs) are essential tools used to identify flood risk in specific areas. These maps are produced by the Federal Emergency Management Agency (FEMA) and serve several purposes, including helping communities enforce floodplain management regulations, determining flood insurance requirements, and informing land-use planning and development decisions. FIRMs depict flood hazard zones and provide details on the likelihood of flooding in different areas, based on factors such as historical data, terrain, and hydrology. The following provides a description of the different flood zones:

Zone	Description
AE	This zone represents areas that are within the 100-year floodplain, meaning they have a 1% annual chance of flooding in any given year. These areas are subject to significant flood risk, and development is typically subject to stricter regulations. Zone AE areas are usually subject to mandatory flood insurance for federally backed mortgages.
A	Areas in Zone A are also part of the 100-year floodplain, but detailed flood elevation data is not available. These areas may experience flooding, but the specific base flood elevation (BFE) has not been

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Zone	Description
	determined. Zone A indicates high flood risk and may require flood insurance.
X (Shaded)	These areas are part of the 500-year floodplain, which means they have a 0.2% annual chance of flooding. While the risk is lower than in the 100-year floodplain, areas in shaded Zone X can still experience moderate flooding. Flood insurance is not required, but it may be recommended depending on the situation.
X (Unshaded)	This represents areas with the lowest flood risk, located outside both the 100-year and 500-year floodplains. While flooding is unlikely, it is still possible. These areas are not subject to flood insurance requirements under the National Flood Insurance Program (NFIP).
AO	Zone AO is used for areas subject to shallow flooding, typically from sheet flow or ponding, where water depths range from 1 to 3 feet. Flood insurance is required for properties in this zone, and the map indicates expected depths of flooding rather than specific elevation.
VE	This zone applies to coastal areas that are subject to high-velocity wave action from storm surges or tsunamis. These areas are within the 100-year floodplain and experience a greater risk of severe damage due to waves. Development in these areas is strictly regulated, and flood insurance is mandatory.
D	Zone D indicates areas where there is a possible but undetermined flood risk. No flood hazard analysis has been conducted in these areas. Flood insurance may not be required, but owners in Zone D should consider purchasing it as the risk is unknown.

FIRMs are critical for both public and private sectors. Communities use them to guide development, mitigate flood risk, and comply with the National Flood Insurance Program (NFIP). Property owners and insurers use FIRMs to determine flood insurance requirements, assess risk levels, and plan for future development or improvements. They provide detailed information about base flood elevations, floodway boundaries, and areas with specific flooding risks, helping to reduce potential flood losses.

Understanding FIRMs and flood zones is crucial for homeowners, developers, and community planners in flood-prone areas. These maps help make informed decisions to mitigate the risks posed by flooding.

3.4.12.2 Location

In the planning area, river flooding is most likely to occur along the Wapsipinicon River and Maquoketa River and their tributaries. These waterways, which run through several



towns and agricultural areas, are highly susceptible to flooding due to heavy rainfall, snowmelt, or upstream conditions.

In the City of Anamosa, located along the Wapsipinicon River, river flooding is a well-documented risk. The Wapsipinicon River, which flows through the heart of the town, has a history of flooding during heavy rain events, impacting residential neighborhoods and local infrastructure. For example, during major flood events, such as the one in 2008, portions of the city, including homes and businesses near the riverbank, were inundated, causing significant damage.

Further upstream in Monticello, the Maquoketa River poses a similar risk. Flooding in this area often affects low-lying agricultural lands and infrastructure, including roadways near the river. Monticello experienced severe flooding during the 2010 dam failure at the Lake Delhi dam on the Maquoketa River, which led to widespread downstream flooding and impacted homes, farms, and local businesses.

Rural areas adjacent to these rivers are also vulnerable. For example, Oxford Junction, located near the Wapsipinicon River’s tributaries, experiences regular flooding, especially in areas where drainage systems are overwhelmed by heavy rains. Floodwaters in these regions often cut off access to rural roads and damage farmlands, further stressing the local agricultural economy.

Overall, areas in the planning area near the Wapsipinicon and Maquoketa rivers are particularly prone to riverine flooding, affecting both urban centers like Anamosa and Monticello as well as rural regions. This makes flood preparedness and mitigation efforts critical for the planning area.

Applicable Jurisdictions	
Unincorporated Jones County	City of Oxford Junction
City of Anamosa	City of Wyoming
City of Martelle	Anamosa CSD
City of Monticello	Midland CSD
City of Morley	Monticello CSD
City of Olin	Olin CSD
City of Onslow	Sacred Heart School
	St. Patrick School
Applicable	Not Applicable

3.4.12.3 Magnitude/Severity

The magnitude and severity of river flooding in the planning area are measured based on several key factors:

1. **Flood Stage and River Gauge Levels:** River flooding is often measured using river gauges, which monitor water levels in rivers and streams. The flood stage is a specific water level at which a river begins to overflow its banks and cause damage to the surrounding areas. These levels are monitored by the National Weather Service (NWS) and the U.S. Geological Survey (USGS) in real time, allowing local authorities to predict the severity of a flood event. Flood severity is categorized into minor, moderate, or major flooding depending on how high the water level rises above the flood stage.
2. **Area of Inundation:** The size of the area flooded is a key indicator of the flood's magnitude. This is determined by floodplain mapping, which shows how far floodwaters are expected to spread. The larger the area inundated, the greater the flood's severity in terms of potential damage to property, infrastructure, and agriculture.
3. **Duration of the Flood:** The length of time that floodwaters remain above flood stage also determines the severity of the event. Longer-duration floods can cause more extensive damage as water has more time to erode structures, degrade infrastructure, and impact agriculture.
4. **Rate of Water Rise:** The speed at which river levels rise is critical in assessing the flood's potential danger. Rapidly rising water allows less time for preparation or evacuation, increasing the threat to life and property. Flash floods, in particular, can occur with little warning.
5. **Historical Comparisons:** Floods are often measured in relation to historical events, such as the 100-year or 500-year flood. A 100-year flood refers to a flood event that has a 1% chance of occurring in any given year, while a 500-year flood has a 0.2% chance. These categories help quantify the rarity and potential severity of a flood event.
6. **Damage Potential:** The impact of the flood on people, property, and infrastructure is another measure of severity. This includes the extent of property damage, loss of life, disruption of services, and the economic toll on the community. The more critical infrastructure and population centers affected, the more severe the flooding is considered to be.

3.4.12.4 Past Occurrences

Reviewing past occurrences of river flooding, both locally and regionally, allows the planning area to better prepare for future incidents by understanding the conditions and impacts of previous events. Historical floods, such as the 2008 Midwest flood and the 2010 Lake Delhi dam failure, provide valuable lessons on vulnerabilities in infrastructure, response times, and flood mitigation efforts. While not all events are localized to the planning area, they highlight common risks, such as levee breaches, dam failures, and prolonged rainfall, which can lead to severe flooding. By examining these events, the planning area can improve flood response strategies, strengthen infrastructure, and implement more effective mitigation measures to reduce the impact of future river flooding.

- July 1993 (Great Midwest Flood): The Mississippi River and its tributaries, including the Missouri and Des Moines rivers, flooded across several Midwestern states, including Iowa. The flood caused widespread devastation, affecting more than 20 million acres of land, damaging crops, homes, and infrastructure, and resulting in approximately \$15 billion in damages.
- June 2008 (Jones County, Iowa): During the widespread Midwest flooding, the Wapsipinicon River overflowed its banks, affecting Jones County, particularly in Anamosa. The flooding resulted in widespread property damage, road closures, and disrupted daily life. A Presidential Disaster Declaration (FEMA-1763-DR-IA) was issued for Iowa, including Jones County, allowing federal assistance for recovery efforts.
- July 2010 (Monticello, Jones County, Iowa): The failure of the Lake Delhi dam on the Maquoketa River caused significant downstream flooding, including in Monticello. The flood damaged homes, businesses, and agricultural land. This event contributed to the disaster declaration FEMA-1930-DR-IA, which included several Iowa counties affected by floods.
- May 2013 (Des Moines, Iowa): The Des Moines River flooded after several days of heavy rainfall, causing significant damage to infrastructure and homes in the area. Portions of downtown Des Moines were submerged, and the flood disrupted transportation and business operations.
- September 2016 (Jones County, Iowa): Heavy rainfall led to the Wapsipinicon River flooding, affecting areas around Anamosa and Monticello. The event led to a state disaster declaration and activated local response efforts. While the flooding didn't reach the scale of previous events, the impact on infrastructure and agriculture was notable.
- March 2019 (Statewide, including Jones County, Iowa): Severe flooding affected much of Iowa, including Jones County, after rapid snowmelt and heavy rains.

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swelled the Wapsipinicon River and other waterways. The flooding prompted a Presidential Disaster Declaration (FEMA-4421-DR-IA), providing federal resources for response and recovery efforts across the state, including in Jones County.

3.4.12.5 Likelihood of Future Occurrence

The likelihood of future river flooding in the planning area is considered moderate to high based on local, regional, and state information. The planning area is located along the Wapsipinicon and Maquoketa Rivers, which have both experienced significant flooding in the past, including major events in 2008 and 2010. These rivers, combined with the county's topography and proximity to agricultural land, make it susceptible to both heavy rainfall and snowmelt events, which are common drivers of river flooding in Iowa. Regionally, Iowa has seen an increase in the frequency and intensity of flood events, partially due to changing weather patterns and increased precipitation, as noted in the state's hazard mitigation plans. Furthermore, FEMA flood maps indicate that large portions of the county, particularly near rivers and low-lying areas, remain within designated flood zones, underscoring the continued risk of flooding. Based on historical data and current trends, future river flooding events are likely to occur, especially during periods of extreme weather. Preparedness and mitigation efforts remain essential for reducing the potential impacts on the planning area.

3.4.12.6 Climate Change Considerations

While river flooding is a natural hazard, climate change can indirectly influence its frequency and severity. In the planning area, climate change considerations are relevant because of changing precipitation patterns. Scientific studies have shown that warmer temperatures are leading to more intense and frequent rainfall events, which can overwhelm rivers and increase the risk of flooding. Additionally, changes in seasonal weather patterns, such as earlier snowmelt or longer periods of wet conditions, can raise the likelihood of rivers exceeding their banks. Although river flooding itself is not directly caused by climate change, the increased likelihood of extreme weather events due to climate change means that the planning area may experience more frequent and severe flooding in the future. Understanding these trends can help in long-term planning and flood mitigation efforts.

3.4.12.7 Vulnerability

People

The impact of river flooding on the general population could be significant, with vulnerable and underserved populations facing the greatest risks. Residents in flood-prone areas near the Wapsipinicon and Maquoketa Rivers, particularly in Anamosa and Monticello, may experience displacement due to rising waters, with low-income households (11.4%) and renters facing additional challenges in securing temporary housing or financial assistance. Individuals without personal transportation (1.4% of households) may struggle to evacuate safely, particularly in rural areas where road closures are common. Flood events also pose increased risks to older adults and individuals with disabilities (13.1%), as limited mobility may delay evacuation efforts or restrict access to emergency shelters and healthcare services.

Floodwaters can cause widespread disruptions to essential services, including medical care, emergency response, and transportation infrastructure. Underserved populations, such as those reliant on home healthcare or prescription medications, may experience life-threatening delays in accessing medical assistance if healthcare facilities or pharmacies are impacted. Contaminated floodwaters can introduce serious health hazards, such as waterborne illnesses, mold exposure, and respiratory complications, disproportionately affecting those with chronic health conditions or weakened immune systems. Additionally, residents in mobile homes (5.14%) or substandard housing may experience greater structural damage, making them more vulnerable to displacement and long-term housing instability.

Beyond physical impacts, the psychological toll of displacement, property loss, and prolonged recovery can be particularly severe for at-risk groups, such as low-income families, single-parent households, and individuals with pre-existing mental health conditions. Language barriers (0.4%) may further prevent some residents from accessing critical emergency information or assistance programs. Ensuring equitable access to evacuation assistance, emergency shelter, healthcare, and long-term recovery resources will be essential in mitigating the disproportionate burden placed on underserved populations following a flood event.

Economy

The economic impacts would primarily affect businesses and the agricultural sector. Local businesses, particularly those in flood-prone areas like Anamosa and Monticello, could face temporary closures, loss of inventory, and significant repair costs. These

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disruptions would result in reduced revenue, potential job losses, and longer-term financial difficulties for business owners. Agriculture, a cornerstone of the local economy, would also be severely impacted. Floodwaters can destroy crops, wash away nutrient-rich soil, and harm livestock, leading to decreased productivity and long-term financial losses for farmers. The overall economic recovery from a significant flood event could be slow, with long-lasting effects on both local businesses and agricultural operations in the planning area.

Built Environment

General Property

River flooding in Jones County, Iowa, poses a significant risk to property values, especially for areas near the Wapsipinicon and Maquoketa Rivers. Properties that experience repeated flooding or are situated in high-risk flood zones often become less attractive to potential buyers, resulting in diminished market values. Homes and businesses in these flood-prone areas may face increased insurance premiums under the National Flood Insurance Program (NFIP), particularly for structures with a history of repetitive flood damage. This added financial burden can deter prospective buyers and inhibit investment in these areas. The ongoing perception of flood risk may lead to a broader decline in property demand, causing a long-term reduction in property values. This decline impacts individual property owners and contributes to a wider economic strain on the housing market in the planning area, underscoring the importance of proactive flood mitigation measures.

Critical Infrastructure

Roads and bridges, especially those near the Wapsipinicon and Maquoketa Rivers, could be submerged or washed out, disrupting transportation and access to emergency services. Water treatment facilities and sewage systems could also be overwhelmed by floodwaters, leading to potential contamination of drinking water supplies and interruptions in wastewater management. Power lines and communication networks may be damaged, causing outages that affect both residential and business operations. Flooding could also impact schools, hospitals, and government buildings, hindering essential services and emergency response efforts. Repairing and restoring damaged infrastructure would be costly and time-consuming, placing additional strain on local resources and prolonging recovery efforts.

Historical, Cultural, and Natural Environment

Historical sites, such as landmarks, historic buildings, and heritage sites in towns like Anamosa, Monticello, and Oxford Junction, may be damaged or destroyed by floodwaters, leading to the loss of irreplaceable local heritage. Structures like the Anamosa State Penitentiary, Grant Wood Art Gallery in Stone City, and the Hale Bridge could face foundation weakening, structural erosion, or long-term water damage if floodwaters persist. Additionally, historic commercial buildings in downtown Monticello and Anamosa, some of which have stood for more than a century, could suffer flood-related deterioration, threatening their architectural and cultural significance.

Cultural assets, including museums, libraries, and community centers, could face water damage, potentially destroying important artifacts, historical records, or community documents. Facilities such as the Monticello Heritage and Cultural Center, the Wyoming Historical Museum, and the Lawrence Community Center might experience flooded basements, moisture intrusion, or loss of preserved historical materials. Additionally, cemeteries with historical significance, including Riverside Cemetery in Anamosa, could be impacted by erosion or soil displacement, damaging gravesites and historical markers.

The natural environment would also be significantly affected, particularly along riverbanks and in floodplains. Flooding can erode soil, damage vegetation, and disrupt wildlife habitats, leading to long-term changes in the ecosystem. Riparian zones along the Wapsipinicon River and its tributaries may experience sediment displacement, tree loss, and contamination from flood debris, impacting wildlife dependent on these areas. Parks such as Wapsipinicon State Park, Pictured Rocks County Park, and Indian Bluffs State Preserve could suffer trail washouts, loss of native vegetation, and increased sedimentation in water bodies, altering recreational opportunities and ecological balance.

Agricultural lands may be affected by nutrient loss, soil depletion, and sediment deposition, reducing crop productivity and soil health. Runoff from flooded areas could introduce chemicals, livestock waste, and debris into local waterways, affecting water quality and aquatic life. Recovery of these natural areas and farmlands could take years, requiring extensive restoration efforts to repair the environmental damage caused by flooding.

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Future Land Use and Development

If river flooding were to occur in the planning area, it would likely influence future land use and development. Areas that experience frequent or severe flooding, particularly those in designated flood zones along the Wapsipinicon and Maquoketa Rivers, may be subject to stricter land use regulations. New development in these flood-prone areas could be limited or prohibited to reduce future flood risk. Zoning laws may be updated to prevent construction in areas with high flood potential, and existing properties may face new restrictions or requirements for flood mitigation measures, such as elevated building foundations or improved drainage systems.

Local governments and planners may prioritize development in safer, higher-elevation areas, shifting growth away from floodplains. Additionally, efforts to preserve natural floodplains as buffer zones could become a key part of future land use planning, reducing the risk to both existing and future properties. This would also encourage the implementation of green infrastructure, such as wetlands and parks, that can absorb floodwaters and minimize damage. Overall, the impact of flooding would shape land use decisions, with a stronger emphasis on avoiding development in high-risk areas and promoting sustainable, flood-resilient construction practices.

3.4.12.8 Consequence Summary

If river flooding were to occur in the planning area, the consequences could be widespread and severe. Homes and businesses in flood-prone areas would face significant damage, leading to costly repairs and potential displacement of residents. Critical infrastructure, including roads, bridges, and utilities, could be severely impacted, disrupting transportation and access to essential services. The agricultural sector would likely suffer from crop loss and soil erosion, further straining the local economy. Historical and cultural sites could be damaged, potentially losing irreplaceable artifacts or landmarks. Additionally, long-term environmental damage to local ecosystems and water quality could occur, requiring extensive recovery and restoration efforts. The cumulative impact would place a heavy burden on the community, with long-term financial, environmental, and social consequences.

Category	Narrative
Impact on the Public	• Displacement of residents and potential injuries or fatalities. • Health risks from contaminated water and mold exposure.

Category	Narrative
Impact on the Economic Condition of the Planning Area	• Business closures and financial losses, particularly in agriculture. • High costs for repairs and recovery efforts.
Impact on the Historical, Cultural, and Natural Environment	• Damage to historical sites and cultural artifacts. • Long-term harm to local ecosystems, soil erosion, and water contamination.
Impact on Built Environment, General Property, and Critical Infrastructure	• Decline in property values in flood-prone areas. • Damage to roads, bridges, utilities, and essential services.
Impact on the Public Confidence in Government	• Erosion of trust if the response is slow or inadequate. • Increased pressure on local authorities to improve flood prevention and response.
Impact on Responders	• Strain on emergency personnel due to hazardous conditions. • Challenges in reaching affected areas if infrastructure is damaged.
Impact on continuity of operations, including continued delivery of government services	• Disruption of essential services like water, power, and transportation. • Delays in government response and service delivery.
Cascading hazards	• Potential landslides, water contamination, and public health crises. • Increased fire risk from electrical issues and damaged infrastructure.

3.4.13 Severe Thunderstorms

Probability	Population Impact	Property Impact	Economy Impact	Overall Hazard Ranking
2.88	2.81	2.56	2.19	21.77

3.4.13.1 Description

Severe thunderstorms are indeed common in the Midwest, including the planning area, and can develop singly, in clusters, or in long lines. Compared to larger atmospheric events like hurricanes or winter storms, thunderstorms typically affect smaller areas. A standard thunderstorm is around 15 miles in diameter and lasts an average of 30 minutes, though severe storms can travel distances exceeding 600 miles. Thunderstorms form when moisture, rapidly rising warm air, and a lifting mechanism, such as clashing warm and cold air masses, combine to create a powerful system.

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Most thunderstorms produce thunder, lightning, and rain, but severe thunderstorms can generate more dangerous conditions, including tornadoes, straight-line winds of 58 mph or greater, microbursts, hailstorms, and localized flooding. Straight-line winds, which often exceed 60 mph, are a common feature of severe thunderstorms and can sometimes be mistaken for tornadoes due to the extent of damage they cause. Derechos, which are long-lasting, large-scale windstorms associated with rapidly moving thunderstorms, also fall under this hazard. While thunderstorms tend to be short-lived compared to other hazards, their potential for significant damage makes them a major concern in the planning area.

3.4.13.2 Location

In the planning area, severe thunderstorms can affect virtually all regions, including both urban centers and rural areas. Cities are just as susceptible to severe thunderstorm events as more remote parts of the county. Given that thunderstorms are widespread and can travel significant distances, any location in the planning area is at risk.

Severe thunderstorms often cause the most damage in open rural areas where strong winds, hail, and lightning can impact crops, livestock, and farm infrastructure. Additionally, thunderstorms can affect roadways, such as U.S. Route 151 and Iowa Highway 1, by causing hazardous driving conditions due to heavy rain, fallen debris, or downed power lines.

Urban areas, including the towns mentioned, face risks from straight-line winds, hail, and lightning strikes that can damage homes, businesses, and critical infrastructure. Low-lying areas near creeks and rivers, such as along the Wapsipinicon River, are particularly vulnerable to localized flooding from the heavy rainfall that severe thunderstorms often bring. Ultimately, no part of the planning area is immune from the effects of severe thunderstorms, making preparedness important throughout the county.

Applicable Jurisdictions	
Unincorporated Jones County	City of Oxford Junction
City of Anamosa	City of Wyoming
City of Martelle	Anamosa CSD
City of Monticello	Midland CSD
City of Morley	Monticello CSD
City of Olin	Olin CSD
City of Onslow	Sacred Heart School
	St. Patrick School
Applicable Not Applicable	

3.4.13.3 Magnitude/Severity

The magnitude and severity of severe thunderstorms are measured using several key factors that assess the potential risk to people, property, and infrastructure. One primary measure is wind speed, with the National Weather Service (NWS) defining a severe thunderstorm as one with wind speeds of 58 mph or higher. Stronger winds, including straight-line winds and microbursts, can cause widespread damage to buildings, trees, and power lines. Hail size is another important factor, with severe thunderstorms producing hail that is at least 1 inch in diameter or larger. Hail of this size can cause significant damage to vehicles, homes, crops, and other infrastructure.

Hail Damage	
Pea-sized hail (1/4 inch)	While small, pea-sized hail can cause minor damage, such as denting vehicles and damaging delicate plants. It is generally not large enough to cause significant damage to structures.
Marble-sized hail (1/2 inch)	Hail of this size can begin to cause damage to more sensitive plants and may create minor dings on vehicles or metal surfaces. While it can be loud, this size generally doesn't lead to severe property damage.
Dime to quarter-sized hail (3/4 to 1 inch)	At this size, hail can damage roofing materials like shingles, causing granule loss or cracking. It can also dent vehicles and damage crops.
Golf ball-sized hail (1 ¾ inches)	Hailstones of this size can cause significant damage to vehicles, including cracked windshields and dented metal. It can damage roofing, break windows, and cause severe harm to crops and gardens.
Tennis ball-sized hail (2 ½ inches)	Hail of this size is large enough to puncture roofing materials, break windows, and cause extensive damage to vehicles, including shattered glass. It can also cause injuries to people and animals caught outdoors and devastate agricultural fields.
Baseball-sized hail (2 ¾ inches)	Hail this size can cause major structural damage to buildings, punch holes in roofs, break through windows, and severely damage vehicles. In addition to causing widespread property damage, it poses a serious risk to anyone outdoors, leading to injuries.
Softball-sized hail (4 inches and larger)	Hailstones this size can cause catastrophic damage. They can destroy roofs, shatter windows, total vehicles, and cause serious injuries or even death to people or animals exposed to it. Crops and outdoor infrastructure, such as power lines and fencing, can be decimated.

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The presence or potential for tornadoes within a thunderstorm also increases its severity. Tornado strength is measured using the Enhanced Fujita (EF) scale, which assesses wind speeds and the damage caused. Though tornadoes are measured post-event based on damage, their potential greatly heightens the storm's severity. Rainfall intensity and the risk of flash flooding also contribute to the severity of thunderstorms. Heavy rainfall, measured in inches per hour, can cause localized flooding, especially in low-lying areas.

Additionally, the duration and storm coverage are important. Long-lasting storm systems, such as derechos, which produce damaging winds over hundreds of miles, are particularly severe due to their widespread impact. Lastly, lightning frequency—although not part of the official criteria—can heighten the danger by increasing the risk of fires and power outages. Together, these factors help the NWS and local authorities assess the severity of severe thunderstorms and guide public safety measures.

3.4.13.4 Past Occurrences

Reviewing past occurrences of severe thunderstorms and hail, both within and beyond the planning area, allows the planning area to better prepare for future incidents by understanding the conditions and impacts of previous events. Historical storms, such as the 2020 derecho and significant hail events in Iowa, provide valuable insights into how severe weather can affect infrastructure, agriculture, and public safety. While not all events are localized to the planning area, they highlight common vulnerabilities, such as power outages, property damage, and crop loss, that can inform future mitigation strategies. By studying these events, the planning area can improve response efforts, strengthen infrastructure, and better protect residents from the risks associated with severe thunderstorms and hail.

- April 13, 2006 (Eastern Iowa, including Jones County): A severe thunderstorm produced hail up to 2 inches in diameter, damaging homes, vehicles, and crops across the region. This event led to a Presidential Disaster Declaration (FEMA-1630-DR-IA), covering Jones County and other affected areas, providing federal assistance for recovery efforts.
- August 9, 2020 (Midwest Derecho): One of the most significant severe thunderstorm events in Iowa's history, a powerful derecho swept across the Midwest, including Jones County, with wind speeds exceeding 100 mph and widespread hail damage. The storm caused extensive damage to homes, trees, power lines, and crops, leaving many without power for days. The disaster resulted in a Presidential Disaster Declaration (FEMA-4557-DR-IA) to support recovery.
- July 27, 2011 (Central Iowa): A severe thunderstorm produced hail up to 4 inches in diameter, causing significant damage to vehicles, homes, and crops in parts of

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central Iowa. This storm caused widespread destruction to agricultural fields, reducing crop yields and leading to substantial financial losses for farmers.

- June 20, 2015 (Southwest Iowa): Severe thunderstorms brought baseball-sized hail, causing extensive damage to buildings, vehicles, and crops. Hail broke windows, punctured roofs, and damaged cars across multiple counties. Agricultural losses were significant, particularly in corn and soybean fields.
- May 25, 2008 (Iowa City, Iowa): A massive hailstorm struck Iowa City, producing hailstones up to 3 inches in diameter. The storm caused widespread property damage, including shattered windows and dented vehicles, and resulted in significant insurance claims across the region.

3.4.13.4 Likelihood of Future Occurrence

The likelihood of future severe thunderstorms in the planning area is high, based on local, regional, and state information. Severe thunderstorms are common in Iowa, particularly during the spring and summer months when the atmospheric conditions are conducive to storm development. The planning area, like much of the state, frequently experiences weather patterns that bring warm, moist air from the south, which interacts with cooler air masses, leading to the formation of strong storms. Historical data from the National Weather Service and the Iowa State Hazard Mitigation Plan indicate that severe thunderstorms, including those with damaging winds, large hail, and occasional tornadoes, are recurring hazards in this region. Additionally, changing climate patterns, which are predicted to increase the frequency of intense storms, suggest that the planning area will continue to experience severe thunderstorms regularly in the future. This makes ongoing preparedness and mitigation efforts crucial for reducing the impacts of these events.

3.4.13.6 Climate Change Considerations

While severe thunderstorms are a natural hazard, there are climate change considerations that may influence their frequency and intensity. Scientific research suggests that a warming climate could contribute to more intense and frequent severe weather events, including thunderstorms. Warmer temperatures allow the atmosphere to hold more moisture, which can fuel stronger storms with increased potential for heavy rainfall, hail, and damaging winds. Additionally, changes in jet stream patterns, influenced by climate change, may lead to more frequent or prolonged periods of severe weather. However, it is important to note that while climate change may influence the conditions that make severe thunderstorms more likely, these storms are still primarily driven by natural atmospheric processes. While not all impacts of climate change on thunderstorms are fully understood, the potential for more frequent severe

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weather events suggests that long-term preparedness and adaptation efforts may become increasingly important in the planning area.

3.4.13.7 Vulnerability

People

The impact of severe thunderstorms on the general population could be significant, with vulnerable and underserved populations facing the greatest risks. Damaging winds, large hail, and lightning strikes can pose immediate threats to life and safety, particularly for individuals living in mobile homes (5.14%) or substandard housing, which are more susceptible to structural damage. Older adults, individuals with disabilities (13.1%), and those with mobility limitations may face increased risk of injury from falling trees, debris, or damaged structures if they are unable to quickly seek shelter or evacuate unsafe dwellings.

Power outages caused by downed lines could disrupt heating, cooling, and access to medical equipment, posing severe risks to residents with chronic health conditions, individuals relying on electric-powered medical devices, and those with limited mobility. Low-income households (11.4%) and renters who lack backup power sources or alternative housing options may struggle to maintain safe living conditions during prolonged outages. Additionally, individuals without personal transportation (1.4%) could face barriers to relocating to emergency shelters or seeking medical care if severe storms cause widespread road closures or flooding.

Lightning strikes and secondary hazards, such as house fires or hazardous material spills, could create additional risks for underserved communities, especially those without immediate access to emergency response services. Ensuring equitable access to storm warnings, emergency shelter, and medical support will be critical in reducing the disproportionate impact on at-risk residents and minimizing the long-term effects of storm-related disruptions.

Economy

The economic impacts could be considerable. Local businesses might experience temporary closures due to damage from strong winds, hail, or power outages, leading to a loss of revenue and potential repair costs. The agricultural sector, which is a key component of the local economy, could be significantly impacted by hailstorms and high winds that damage crops and equipment, resulting in reduced yields and financial strain for farmers. Additionally, repair and recovery efforts for homes, vehicles, and

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infrastructure could place a burden on local residents, who may face increased insurance claims or out-of-pocket expenses. Public funds may also be required to restore damaged infrastructure, such as roads, power lines, and public buildings, further straining local government budgets. In the longer term, frequent severe thunderstorms may deter investment in vulnerable areas and slow economic growth in the region.

Built Environment

General Property

The impact on property values could be negative, particularly in areas that experience frequent or severe damage. Repeated damage from high winds, hail, or flooding could make certain properties less desirable, leading to a decrease in their market value. Homes and businesses in areas prone to storm damage may face higher insurance premiums, further reducing their attractiveness to potential buyers. If severe thunderstorms cause significant structural damage, properties might require costly repairs, which could also affect their value and marketability. Over time, areas that are perceived to be at higher risk for storm damage may see slower real estate development and reduced property demand, which could contribute to a decline in overall property values in the region.

Critical Infrastructure

If severe thunderstorms were to occur in the planning area, critical infrastructure could be significantly impacted. Power lines and electrical grids are especially vulnerable to high winds and lightning strikes, which could lead to widespread power outages affecting homes, businesses, and emergency services. Roads and bridges may also be blocked or damaged by fallen trees or debris, making it difficult for residents to travel and for emergency responders to access affected areas. Additionally, communication networks, including cell towers, could be disrupted by high winds or lightning, hindering the ability of residents and emergency services to communicate effectively during and after the storm.

Water and wastewater treatment facilities might also be affected, either by direct storm damage or power outages, disrupting essential services like drinking water supply and sewage management. Damage to public buildings such as schools, hospitals, and government offices could impair the delivery of essential services, particularly if these buildings are not storm-hardened. The overall effect on critical infrastructure would hinder recovery efforts and slow down the return to normal operations.

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Historical, Cultural, and Natural Environment

Severe thunderstorms could cause significant damage to historical buildings and landmarks that are not built to withstand high winds or hail. Structures such as the Anamosa State Penitentiary, the Grant Wood Art Gallery in Stone City, and the Hale Bridge may experience broken windows, roof damage, or structural weakening, requiring costly repairs or restoration. Additionally, cultural institutions such as the Monticello Heritage and Cultural Center and Wyoming Historical Museum could face water damage, wind-driven debris impacts, or power outages, potentially compromising valuable historical collections and community records.

The natural environment is also at risk, with severe thunderstorms causing tree damage, deforestation, and soil erosion. Parks such as Wapsipinicon State Park, Pictured Rocks County Park, and Indian Bluffs State Preserve could see downed trees, washed-out trails, and habitat disruption, affecting wildlife and recreational opportunities. Agricultural areas may suffer erosion and runoff contamination, impacting waterways like the Wapsipinicon River and leading to long-term ecosystem changes.

Overall, storm damage to historical, cultural, and natural resources could be lasting, requiring extensive restoration efforts. Protecting historic sites and natural areas from wind and water damage through preventative maintenance and emergency planning will be essential for preserving the county's heritage and environmental integrity.

Future Land Use and Development

The impact on future land use and development could be significant. Areas that experience frequent storm damage from high winds, hail, or flooding may be less attractive for future development due to the increased risk. Zoning regulations or building codes may be updated to require stronger construction standards, such as storm-resistant materials and designs, to better withstand severe weather. This could increase the cost of development but would help protect future properties from storm damage.

Developers may avoid building in high-risk areas, such as those prone to flooding or where infrastructure is repeatedly damaged by storms. Agricultural land could also be affected, as storm damage to crops may lead to changes in land use practices, such as implementing more resilient farming techniques or reducing the use of certain vulnerable areas. Additionally, areas with a history of storm damage might see slower growth in real estate or commercial investment, as developers and buyers may be cautious about the risks associated with severe weather. Overall, the occurrence of

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severe thunderstorms could influence planning and development decisions, leading to a focus on resilience and risk mitigation in future projects.

3.4.13.8 Consequence Summary

If severe thunderstorms were to occur in the planning area, the consequences could be widespread and impactful. High winds and large hail could damage homes, vehicles, and agricultural fields, leading to costly repairs and loss of crops. Critical infrastructure, such as power lines and communication networks, could be disrupted, causing power outages and limiting access to emergency services. Historical and cultural sites may suffer damage, and the natural environment, including local ecosystems and wildlife habitats, could be harmed by storm runoff and soil erosion. Economic losses would likely be felt by local businesses and the agricultural sector, and the need for repairs and recovery efforts could strain local resources.

Category	Narrative
Impact on the Public	• Injuries from falling debris, damaged structures, and hail. • Displacement due to home damage or power outages.
Impact on the Economic Condition of the Planning Area	• Loss of revenue from business closures and agricultural damage. • Increased costs for repairs and recovery efforts.
Impact on the Historical, Cultural, and Natural Environment	• Damage to historical buildings and cultural institutions. • Erosion, tree loss, and habitat disruption in natural areas.
Impact on Built Environment, General Property, and Critical Infrastructure	• Decreased property values in areas with repeated storm damage. • Damage to power lines, roads, and communication systems, leading to service disruptions.
Impact on the Public Confidence in Government	• Public frustration if response and recovery are slow or inadequate. • Increased demand for stronger building codes and preparedness measures.
Impact on Responders	• Strain on emergency personnel responding to multiple incidents. • Safety risks for responders during recovery operations in hazardous conditions.
Impact on continuity of operations, including continued delivery of government services	• Temporary closure of public services due to infrastructure damage or power outages. • Delayed service delivery and recovery due to damaged facilities.

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Category	Narrative
Cascading hazards	Flash flooding from heavy rain, electrical fires from downed power lines, and public health risks from prolonged outages.

3.4.14 Severe Winter Storms

Probability	Population Impact	Property Impact	Economy Impact	Overall Hazard Ranking
2.94	2.81	2.56	2.13	22.05

3.4.14.1 Description

Severe winter storms involve extreme winter weather conditions that disrupt day-to-day activities and create dangerous environments. These storms can bring blizzard conditions, heavy snow, blowing snow, freezing rain, sleet, and extreme cold. In the Midwest, severe winter storms are most likely to occur between late October and late March, when cold Arctic air collides with warmer air masses. Blizzards, the most dangerous of winter storms, combine low temperatures, heavy snowfall, and winds of at least 35 miles per hour, causing snow to drift and visibility to drop to near zero. A severe blizzard is marked by even stronger winds of at least 45 miles per hour, along with falling or blowing snow and temperatures of 10 degrees Fahrenheit or lower. Heavy snowstorms can drop four or more inches of snow in a 12-hour period or six or more inches in 24 hours, making travel hazardous and straining local infrastructure. Ice storms, where freezing rain coats surfaces, can bring down power lines and make roads impassable. Severe winter storms in the Midwest are notorious for causing widespread power outages, transportation disruptions, and dangerous cold-related health risks, such as frostbite and hypothermia. These storms demand preparation and resilience from both individuals and communities.

3.4.14.2 Location

All areas of the planning area are susceptible to severe winter storms due to the widespread nature of snow, ice, and cold temperatures. However, certain areas may experience more significant impacts based on geography and infrastructure. Rural areas are particularly vulnerable, as they may be more isolated and slower to receive snow removal and emergency services. Roads in rural regions, especially less-traveled county roads and highways, can become impassable due to snowdrifts or ice accumulation, leaving residents stranded or unable to access essential services.



Additionally, low-lying areas and areas prone to flooding may experience compounded problems during winter storms, as melting snow and ice can cause localized flooding when temperatures rise. Farmsteads and agricultural operations in the county also face unique risks, including threats to livestock, equipment, and infrastructure, such as barns and storage facilities, which could be damaged by heavy snow or ice accumulation.

Towns like Anamosa and Monticello, while more urbanized, are not immune to the effects of severe winter storms. They may face challenges with maintaining roads, keeping public services operational, and ensuring vulnerable populations have access to shelter and heating. Overall, while severe winter storms affect the entire planning area, rural regions and agricultural areas may face more severe consequences due to isolation and infrastructure challenges.

Applicable Jurisdictions	
Unincorporated Jones County	City of Oxford Junction
City of Anamosa	City of Wyoming
City of Martelle	Anamosa CSD
City of Monticello	Midland CSD
City of Morley	Monticello CSD
City of Olin	Olin CSD
City of Onslow	Sacred Heart School
	St. Patrick School
Applicable	Not Applicable

3.4.14.3 Magnitude/Severity

The magnitude and severity of severe winter storms are measured by several key factors, which include the amount of snowfall, wind speeds, temperature, and the duration of the storm. Snowfall accumulation is one of the primary indicators, with heavy snowstorms defined as dropping four or more inches of snow within a 12-hour period or six or more inches in 24 hours. Wind speed is another critical measure, especially during blizzards, which are characterized by winds of at least 35 miles per hour and reduced visibility due to blowing snow. Severe blizzards involve winds exceeding 45 miles per hour, along with extremely low temperatures, often 10 degrees Fahrenheit or lower. Temperature plays a vital role in assessing the storm's severity, particularly when extreme cold accompanies the storm, increasing the risk of frostbite and hypothermia. Ice accumulation from freezing rain is another important measure, as even a quarter-inch of ice can cause significant damage to power lines, trees, and roadways. The duration of the storm also impacts its severity, with longer-lasting storms leading to greater accumulations, prolonged exposure to extreme cold, and more significant disruptions to infrastructure

and transportation. Together, these factors help meteorologists and emergency services gauge the severity of a winter storm and guide public safety measures.

3.4.14.4 Past Occurrences

Reviewing past occurrences of severe winter storms allows the planning area to better prepare for future events by understanding the typical impacts and challenges associated with these hazards. Historical incidents, such as blizzards and ice storms across Iowa and the Midwest, provide valuable insights into how extreme cold, heavy snow, and ice can disrupt transportation, damage infrastructure, and cause widespread power outages. While not all past events are localized to the planning area, they highlight common vulnerabilities and offer lessons on improving response efforts, infrastructure resilience, and public safety measures. By studying these past events, the planning area can enhance its readiness for future severe winter weather, reducing potential damage and ensuring quicker recovery.

- December 8-11, 2009 (Iowa and Midwest): A powerful winter storm brought heavy snow, ice, and blizzard conditions to much of Iowa, including the planning area. Wind gusts reached up to 50 mph, and snow accumulations of 10-16 inches were reported. The combination of high winds and snow caused road closures, power outages, and numerous accidents. A Presidential Disaster Declaration (FEMA-1880-DR-IA) was issued for Iowa, including Jones County, due to the widespread impacts of the storm.
- February 1-2, 2011 (Midwest Blizzard): Known as the Groundhog Day Blizzard, this storm affected a large portion of the Midwest, including Iowa. Wind gusts exceeded 40 mph, and snow accumulations ranged from 12 to 20 inches in parts of the state. Severe drifting snow and icy conditions caused road closures, power outages, and stranded travelers. Jones County was among the counties significantly impacted by this storm, and a disaster declaration was issued statewide.
- January 29-February 3, 2015 (Iowa): A significant winter storm brought heavy snow and strong winds to Iowa, including the planning area. Snowfall totals ranged from 6 to 12 inches, and wind gusts of 30 to 40 mph created blizzard-like conditions, making travel dangerous. Jones County experienced road closures and power outages, but no federal disaster declaration was issued for this event.
- March 13-14, 1997 (Iowa): A late-season winter storm brought 6 to 12 inches of snow to much of Iowa, including Jones County. High winds of up to 45 mph caused drifting snow and significant travel disruptions. The heavy snow and wind led to widespread power outages and damage to infrastructure, prompting a Presidential Disaster Declaration (FEMA-1157-DR-IA).

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3.4.14.5 Likelihood of Future Occurrence

The likelihood of future severe winter storms in the planning area is high, based on local, regional, and state data. Iowa, which includes the planning area, regularly experiences harsh winter weather from late fall through early spring. Historical records from the National Weather Service (NWS) and Iowa's State Hazard Mitigation Plan show that winter storms, including heavy snow, ice, and blizzard conditions, are recurring hazards in the region. The state's geography, with its flat terrain and exposure to Arctic air masses, makes it particularly susceptible to severe winter weather. On average, Iowa experiences multiple winter storms annually, with some storms causing significant disruptions. Given this frequency and the consistent winter weather patterns in the Midwest, the planning area is expected to continue facing severe winter storms in the future.

3.4.14.6 Climate Change Considerations

While severe winter storms are a natural hazard, there are some climate change considerations that could influence their frequency or intensity. Although climate change is typically associated with warming temperatures, research suggests that warming in the Arctic can disrupt the jet stream, leading to more frequent and prolonged periods of cold air descending into the Midwest, which could increase the likelihood of severe winter storms. Additionally, a warmer atmosphere can hold more moisture, potentially leading to heavier snowfall during winter storms. However, the overall impact of climate change on the frequency and severity of winter storms remains complex and uncertain. While it is not fully clear how climate change will affect future winter storm patterns, it is essential to continue monitoring climate trends and adapt preparedness strategies as needed to address any potential changes in storm behavior.

3.4.14.7 Vulnerability

People

The impact of severe winter storms on the general population could be significant, with vulnerable and underserved populations facing the greatest risks. Heavy snow, ice, and reduced visibility would create dangerous travel conditions, increasing the likelihood of accidents and road closures. Individuals without personal transportation (1.4% of households) could become isolated, making it difficult to access essential resources, medical care, or emergency shelters. Older adults and individuals with disabilities (13.1%) may face greater mobility challenges, increasing their risk of being stranded

without assistance or experiencing delays in emergency response services during severe weather conditions.

Prolonged power outages caused by ice storms or snow accumulation on power lines could leave households without heat, making homes unsafe during extreme cold. Low-income families (11.4%) and renters who lack backup heating sources may be unable to maintain warm indoor temperatures, increasing the risk of hypothermia or frostbite. Residents living in mobile homes (5.14%) or substandard housing could face greater exposure to cold temperatures due to poor insulation and heating inefficiencies. Additionally, individuals who rely on electric-powered medical devices would be at high risk if outages disrupt life-sustaining care.

Beyond physical health risks, severe winter storms could have lasting mental health impacts, particularly for those experiencing prolonged isolation, stress, or anxiety due to hazardous conditions. Limited English proficiency (0.4%) could also create barriers for some residents in understanding emergency notifications or seeking assistance. Ensuring equitable access to heating shelters, emergency transportation, and medical support would be critical in minimizing the disproportionate burden on at-risk populations during and after winter storms.

Economy

The economic impact on the planning area could be substantial. Businesses may face temporary closures due to hazardous travel conditions, loss of power, and disruptions in the supply chain, leading to lost revenue and productivity. The agricultural sector, vital to the local economy, could be affected by damage to livestock, crops, and equipment, particularly during extended periods of extreme cold or heavy snowfall. Infrastructure repair costs would rise, with local governments bearing the financial burden of snow removal, road maintenance, and restoring power and utilities. Extended power outages may also lead to increased repair costs for businesses and homes, while residents could face higher heating expenses during prolonged cold periods. Additionally, school closures and disruptions in daily operations can cause further economic strain on families who may need to adjust work schedules or pay for childcare. The cumulative effects of these disruptions could slow economic recovery, particularly if storms are severe or occur repeatedly during the winter season.

Built Environment

General Property

The impact on property values in the planning area could be minimal in the short term but potentially more significant over time if the region experiences repeated or severe damage. Properties that experience frequent winter storm damage, such as collapsed roofs due to heavy snow, broken pipes from freezing temperatures, or damage caused by ice accumulation, may see a decline in their market value, especially if repairs are costly or ongoing. Homes that are not adequately winterized or located in areas more susceptible to storm damage might become less desirable to buyers. Additionally, if severe winter storms lead to infrastructure damage or long-term disruptions, it could lower property appeal in certain areas. However, individual storm events typically do not result in immediate drops in property values unless there is widespread, repeated damage, making preparedness and resilience measures important in maintaining property stability over time.

Critical Infrastructure

The impact on critical infrastructure in the planning area could be significant. Power lines and electrical grids are particularly vulnerable to heavy snow, ice accumulation, and high winds, which can lead to widespread power outages that may last for several days. Without power, heating systems, water pumps, and other essential services would be disrupted, particularly during periods of extreme cold. Roads and bridges could become hazardous or impassable due to snow and ice buildup, limiting access for emergency vehicles and isolating some communities. Prolonged freezing conditions could also damage road surfaces, leading to costly repairs.

Water and wastewater systems could be compromised if pipes freeze or if power outages interrupt the functioning of treatment facilities. Communication networks, such as cell towers and internet infrastructure, might also be disrupted, making it difficult for residents to stay informed or contact emergency services during and after the storm. Additionally, public buildings like schools, hospitals, and government facilities could face closure or reduced operations due to storm damage or power loss, further impacting the community's ability to respond effectively to the event. Overall, severe winter storms would strain critical infrastructure, requiring significant resources for restoration and repairs.

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Historical, Cultural, and Natural Environment

Severe winter storms could cause significant damage to historical buildings and landmarks, particularly older structures not designed to withstand heavy snow and ice accumulation. Buildings such as the Anamosa State Penitentiary, the Grant Wood Art Gallery in Stone City, and historic farmsteads in rural areas may suffer roof collapses, foundation stress, or moisture damage from ice buildup and freeze-thaw cycles. Additionally, cultural institutions like the Monticello Heritage and Cultural Center and the Wyoming Historical Museum could experience frozen pipes, heating failures, or structural strain, potentially damaging historical collections and valuable artifacts.

The natural environment would also be affected by heavy snow, ice accumulation, and extreme cold. Tree limbs breaking under ice weight could damage parks and nature preserves such as Wapsipinicon State Park, Indian Bluffs State Preserve, and Pictured Rocks County Park, affecting wildlife habitats and recreational areas. Wildlife may struggle to find food and shelter, particularly during prolonged or extreme cold events. Agricultural areas could also suffer, with livestock exposed to freezing conditions and prolonged snow cover delaying planting cycles and damaging soil conditions.

Future Land Use and Development

The impact on future land use and development in the planning area could influence both construction practices and planning decisions. Developers and planners might prioritize storm-resistant infrastructure and building designs to better withstand heavy snow, ice, and extreme cold. This could lead to the adoption of more robust building codes, requiring the use of materials that can handle significant snow loads, better insulation to protect against freezing temperatures, and more reliable heating systems to prevent damage from power outages.

In areas that are particularly vulnerable to the effects of winter storms, such as those prone to ice accumulation or snow drifting, development may be restricted or altered to reduce future risks. Transportation infrastructure may also be reassessed, with planners potentially focusing on creating more resilient roadways, bridges, and utility networks that can handle frequent or severe winter weather. In addition, there may be a shift toward enhancing emergency response capabilities in rural areas, ensuring that future development includes easier access for emergency services during winter storms. Overall, the occurrence of severe winter storms would likely drive increased consideration of climate resilience in land use and development decisions in the planning area.

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3.4.14.8 Consequence Summary

If severe winter storms were to occur in the planning area, the consequences could be widespread and disruptive. Heavy snow, ice, and extreme cold would likely cause power outages, hazardous travel conditions, and potential damage to homes, businesses, and infrastructure. Residents could face dangerous conditions due to blocked roads, lack of heat, and limited access to emergency services. Critical infrastructure, such as power lines and water systems, could be compromised, leading to extended recovery times. Historical buildings and cultural sites could be damaged, while the natural environment, including trees and wildlife, would also be impacted. The cumulative effects of the storm would strain local resources, delay recovery efforts, and pose risks to public safety and the economy.

Category	Narrative
Impact on the Public	- Power outages and dangerous travel conditions. - Increased risk of hypothermia and frostbite due to extreme cold.
Impact on the Economic Condition of the Planning Area	- Business closures and loss of revenue. - Costs for infrastructure repair and snow removal.
Impact on the Historical, Cultural, and Natural Environment	- Damage to historical buildings and cultural institutions. - Tree loss and disruption to local ecosystems and wildlife.
Impact on Built Environment, General Property, and Critical Infrastructure	- Potential decrease in property values in areas prone to frequent storm damage. - Damage to power lines, water systems, and roadways, leading to long repair times.
Impact on the Public Confidence in Government	- Erosion of trust if storm response and recovery are slow or inadequate. - Pressure on local authorities to improve infrastructure and preparedness.
Impact on Responders	- Strain on emergency personnel due to hazardous conditions and high demand. - Safety risks for responders working in freezing temperatures and snow.
Impact on continuity of operations, including continued delivery of government services	- Temporary closures of public buildings and services. - Delayed or limited access to essential services due to infrastructure damage.
Cascading hazards	Risk of secondary hazards such as frozen pipes, fires from heating sources, and transportation accidents.

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3.4.15 Social Unrest

Probability	Population Impact	Property Impact	Economy Impact	Overall Hazard Ranking
1.31	1.44	1.31	1.19	5.16

3.4.15.1 Description

Social unrest refers to a broad range of activities in which groups of people express dissatisfaction, frustration, or opposition to political, economic, or social conditions. This unrest can manifest in protests, strikes, demonstrations, or even violent riots, and may be driven by issues such as inequality, police actions, racial tensions, labor disputes, or governmental policies. In the Midwest, social unrest has historically been tied to labor movements, civil rights protests, and more recently, responses to national events such as racial justice movements or protests over government mandates. While the Midwest is often viewed as a region with a more moderate or rural demographic, it is not immune to large-scale demonstrations or civil disturbances, especially in urban centers like Chicago, Minneapolis, or St. Louis. These events can disrupt daily life, strain local law enforcement, and sometimes escalate into broader civil disorder that damages property and affects public safety. Understanding the causes and dynamics of social unrest is crucial for local governments to maintain public order and address underlying grievances that may spark these incidents.

3.4.15.2 Location

In the planning area, social unrest is less likely to occur on the same scale as in larger urban centers, but certain areas may be more susceptible due to specific characteristics. Anamosa and Monticello, being the largest population centers in the county, are more likely to experience gatherings or demonstrations, especially around government buildings, public squares, or schools, where protests or organized events typically take place. These towns are also home to businesses, government offices, and law enforcement agencies, which can sometimes be focal points for demonstrations or unrest related to local or broader national issues.

In more rural areas of the planning area, social unrest is less likely due to the smaller, more dispersed populations. However, rural areas that have experienced economic challenges, or where there are strong feelings about political or social issues, could see smaller-scale gatherings or demonstrations.



While social unrest in the planning area is not a frequent occurrence, any public gathering or protest that draws attention to economic or social grievances could potentially result in disturbances, especially if tensions escalate. However, the overall risk of large-scale unrest in the planning area remains lower than in larger urban settings.

Applicable Jurisdictions	
Unincorporated Jones County	City of Oxford Junction
City of Anamosa	City of Wyoming
City of Martelle	Anamosa CSD
City of Monticello	Midland CSD
City of Morley	Monticello CSD
City of Olin	Olin CSD
City of Onslow	Sacred Heart School
	St. Patrick School
Applicable	Not Applicable

3.4.15.3 Magnitude/Severity

The magnitude and severity of social unrest are measured by several factors, including the scale of participation, intensity of actions, and the duration of the unrest. The number of people involved in an incident is a key indicator of its magnitude, with larger protests or gatherings signaling a higher potential for disruption. The level of violence or property damage that occurs during the unrest is also a critical measure of severity. Events that involve vandalism, looting, or clashes with law enforcement are considered more severe than peaceful protests or demonstrations.

Additionally, the geographic spread of the unrest plays a role in determining its magnitude, as incidents that affect multiple locations or larger areas have broader impacts. The duration of the unrest is another important factor, with longer-lasting events creating more strain on public resources and increasing the potential for further escalation. The involvement of external factors, such as the use of law enforcement, emergency declarations, or the activation of the National Guard, also signifies the severity of the incident.

Finally, the economic impact, including damage to businesses, public infrastructure, and the cost of response and recovery, is a key measure of the overall severity. Authorities use these factors to assess the potential threat to public safety and the required level of response to mitigate the unrest and restore order.

3.4.15.4 Past Occurrences

Reviewing past occurrences of social unrest, both locally and regionally, allows the planning area to better prepare for future incidents by understanding the triggers and patterns of these events. Incidents such as the George Floyd protests in Iowa City and Des Moines in 2020 demonstrate how national issues can quickly spark local unrest, especially in response to racial tensions and police actions. Although not all events are specific to the planning area, these examples highlight common challenges, such as the potential for property damage, disruptions to public order, and strained relations between law enforcement and communities. By studying these incidents, the planning area can improve communication strategies, enhance public safety measures, and ensure a balanced response to mitigate the impacts of future unrest.

- May 31-June 1, 2020 (Des Moines, Iowa): Following the death of George Floyd, protests and demonstrations against police brutality erupted in Des Moines. While many protests were peaceful, some escalated into clashes with law enforcement, resulting in property damage, looting, and the use of tear gas by police. Local businesses experienced vandalism, and several arrests were made. The unrest led to curfews and a heightened police presence in the city.
- April 4-9, 1968 (Chicago, Illinois): In the wake of Dr. Martin Luther King Jr.'s assassination, widespread riots broke out in Chicago. Protesters clashed with police, and businesses were looted and set on fire. The National Guard and federal troops were deployed to restore order. The unrest resulted in more than a dozen deaths, hundreds of injuries, and extensive property damage.
- August 1965 (Cedar Rapids, Iowa): Civil rights protests over the treatment of African Americans in employment and housing escalated into confrontations between demonstrators and police. Though the unrest did not involve the same level of violence as seen in other parts of the country, it heightened racial tensions in Cedar Rapids and resulted in several arrests.
- August 10, 2020 (Minneapolis, Minnesota): After the killing of George Floyd in nearby Minneapolis in May 2020, the region saw another wave of social unrest later that summer. A false report of a police shooting led to further protests and looting in downtown Minneapolis. The unrest resulted in damage to businesses and increased tensions between the community and law enforcement.
- June 3-4, 2020 (Iowa City, Iowa): In response to the death of George Floyd and broader protests against police brutality, Iowa City saw significant demonstrations. While much of the activity was peaceful, there were moments of unrest, including confrontations between protesters and law enforcement. Police used tear gas and pepper spray to disperse crowds, leading to tensions between the community and law enforcement. Some property damage was reported, and several arrests were

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made. The protests highlighted local concerns about racial inequality and police practices.

3.4.15.5 Likelihood of Future Occurrence

The likelihood of future social unrest in the planning area, based on local, regional, and state information, is relatively low but cannot be entirely ruled out. The planning area is a predominantly rural area with smaller population centers like Anamosa and Monticello, which historically have not been major hubs for large-scale social unrest. However, regional trends, such as the 2020 protests in larger Iowa cities like Des Moines and Iowa City, show that even smaller communities can experience demonstrations or public gatherings in response to national or state issues, particularly those related to social justice, law enforcement, or political matters.

While rural areas tend to have less frequent occurrences of large-scale unrest compared to urban centers, it is important to note that smaller-scale protests or social tensions could arise if local concerns about economic conditions, political grievances, or other issues gain traction. The likelihood of such events remains relatively low, but preparedness and monitoring of broader state and national trends can help ensure that the planning area is equipped to handle potential incidents of unrest should they occur.

3.4.15.6 Climate Change Considerations

There are no direct climate change considerations for social unrest, as it is not a natural hazard. However, indirectly, climate change could contribute to underlying social and economic conditions that might increase the potential for unrest. For example, as climate change impacts agriculture, energy, and infrastructure, it could lead to resource shortages, economic stress, or displacement of populations, particularly in rural areas like the planning area. These challenges could exacerbate existing social inequalities or political tensions, potentially contributing to unrest. While climate change is not a primary driver of social unrest, it may influence broader conditions that could lead to increased grievances or tensions in the future. Overall, the connection between climate change and social unrest is more complex and indirect, but worth monitoring as part of long-term resilience planning.

3.4.15.7 Vulnerability

People

The impact of social unrest on the general population could vary based on the scale and nature of the incident, with vulnerable and underserved populations at greater risk of disruptions to safety, mobility, and access to essential services. Residents in Anamosa, Monticello, and other areas where demonstrations or protests may occur could experience road closures, delays in public services, and restricted access to businesses. These disruptions could disproportionately affect individuals without personal transportation (1.4% of households), those relying on public services, and residents with disabilities (13.1%) who may struggle to navigate around blocked or inaccessible areas.

Potential clashes between protesters and law enforcement could increase the risk of injuries, particularly for individuals with mobility limitations, low-income residents, or those lacking access to immediate medical care. Underserved populations, such as communities with limited English proficiency (0.4%) or those who rely on public assistance programs, may experience additional difficulties in understanding emergency measures or navigating service disruptions. If demonstrations lead to property damage or public disorder, residents living in rental housing or low-income neighborhoods may be at higher risk of displacement or financial strain if essential services or businesses close temporarily.

Beyond physical risks, social unrest can deepen divisions within the community, leading to increased anxiety, stress, and a sense of insecurity, particularly for historically marginalized or underserved groups. Ensuring equitable access to information, public safety resources, and emergency assistance will be critical in mitigating the disproportionate effects of social unrest on at-risk populations and maintaining community cohesion during periods of heightened tension.

Economy

The economic impact on the planning area could be significant, particularly for local businesses and government resources. Protests or demonstrations could lead to the temporary closure of businesses, resulting in lost revenue, especially for small businesses in cities like Anamosa and Monticello. If unrest escalates into property damage or vandalism, the costs of repairs and insurance claims could strain individual business owners and slow down local commerce. Additionally, the county government may incur costs associated with law enforcement responses, security measures, and potential overtime for public safety personnel. If unrest persists, it could discourage new

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investments or tourism, further affecting the local economy. While large-scale economic disruption is unlikely in a smaller, rural county like this planning area, even smaller incidents of unrest could have ripple effects on the local economy and business operations.

Built Environment

General Property

The impact on property values in the planning area would likely depend on the scale and duration of the event. In most cases, isolated incidents of unrest would have minimal long-term effects on property values. However, if unrest leads to significant property damage, such as vandalism or destruction of buildings, the value of affected properties could temporarily decrease until repairs are made. If unrest becomes frequent or widespread, it could create a perception of instability in certain areas, which might make those areas less attractive to potential buyers or investors, thereby lowering property values over time. For the most part, unless social unrest is prolonged or highly damaging, the impact on property values in the county would likely be minimal.

Critical Infrastructure

The impact on critical infrastructure in the planning area would likely be limited but could become significant depending on the nature and scale of the unrest. Public infrastructure, such as roads, bridges, and government buildings, might be temporarily disrupted if protests block access or if demonstrations occur near key facilities. In extreme cases, infrastructure could be damaged if unrest escalates into vandalism, particularly to public buildings, communication networks, or utilities.

Law enforcement and emergency services could be strained, particularly if resources are diverted to managing protests or maintaining public order. If social unrest results in damage to power lines, water supply systems, or transportation routes, the impact on critical infrastructure could be more severe, potentially disrupting essential services for local residents. However, large-scale disruptions to critical infrastructure are generally less likely in rural areas like this planning area, where social unrest events tend to be smaller in scale compared to larger urban centers.

Historical, Cultural, and Natural Environment

The impact of social unrest on the historical and cultural environment in the planning area could be significant, depending on the scale and nature of the unrest. Historical

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landmarks or culturally significant sites, such as the Anamosa State Penitentiary Museum, Grant Wood Art Gallery in Stone City, and the Jones County Courthouse, could be at risk of vandalism, defacement, or structural damage if demonstrations escalate. Government buildings, monuments, or public memorials, including the Veterans Memorial Hall, could also become focal points during protests, leading to potential property damage or destruction of irreplaceable historical artifacts.

The cultural environment could be affected by disruptions to community events and public institutions, particularly libraries, museums, and community centers, which serve as gathering spaces and sources of historical knowledge. Locations such as the Monticello Heritage and Cultural Center and Wyoming Historical Museum could experience temporary closures, loss of access to historical records, or community division if unrest leads to long-term instability. Prolonged tensions may deter public engagement in cultural activities, affecting heritage preservation efforts and local tourism.

The natural environment would likely face minimal direct impacts, though large gatherings or protests in parks, public spaces, or near natural areas could lead to littering, trampling of vegetation, or minor infrastructure damage. Locations such as Wapsipinicon State Park and Pictured Rocks County Park could see temporary environmental strain from high foot traffic or accidental property damage. While the broader natural ecosystem would likely remain unaffected, instances of arson, prolonged disturbances, or public disorder could lead to lasting environmental consequences, particularly if fires or hazardous material releases occur in urban or rural areas.

Future Land Use and Development

The impact on future land use and development in the planning area would likely be minimal, unless the unrest were prolonged or caused significant damage. In most cases, isolated incidents of unrest would not substantially alter land use or development plans. However, if unrest resulted in significant damage to infrastructure or property, it could lead to changes in how certain areas are developed in the future.

For example, developers and local governments might be more cautious about investing in areas that experienced unrest, particularly if there were concerns about recurring social tensions. Public spaces or government buildings might see enhanced security features or design changes aimed at preventing property damage during potential future events. In some cases, land use policies could be adjusted to limit large gatherings in certain public areas, or there may be an increased focus on planning for resilience and safety in new developments.

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Overall, unless social unrest becomes a persistent issue in the planning area, its impact on future land use and development is likely to be limited. However, lessons learned from any incidents could influence how public spaces and urban areas are designed and managed to mitigate potential risks.

3.4.15.8 Consequence Summary

If social unrest were to occur in the planning area, the consequences could include disruptions to daily life, economic losses, and potential damage to property. Public demonstrations or protests, especially if they escalate, could temporarily shut down businesses, block roads, and strain local law enforcement resources. There is also a risk of property damage to businesses, government buildings, or public infrastructure if tensions rise. Additionally, social unrest could create divisions within the community, leading to heightened tensions and a sense of insecurity among residents. Although large-scale unrest is unlikely, even smaller incidents could cause short-term disruptions and economic strain, while also raising concerns about public safety and community cohesion.

Category	Narrative
Impact on the Public	• Disruption of daily life due to protests or road closures. • Potential for injuries or heightened tensions among community members.
Impact on the Economic Condition of the Planning Area	• Temporary business closures and loss of revenue. • Costs associated with repairing damaged property or infrastructure.
Impact on the Historical, Cultural, and Natural Environment	• Risk of vandalism or damage to historical landmarks or cultural sites. • Minor damage to public parks or natural areas if unrest occurs in these locations.
Impact on Built Environment, General Property, and Critical Infrastructure	• Potential decrease in property values if significant or repeated damage occurs. • Strain on critical infrastructure such as roads, utilities, and government buildings if unrest escalates.
Impact on the Public Confidence in Government	• Erosion of trust in local authorities if response to unrest is perceived as inadequate or heavy-handed. • Calls for changes in policies or increased security measures.
Impact on Responders	• Increased strain on law enforcement and emergency services. • Safety risks for responders managing crowds or unrest.

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Category	Narrative
Impact on continuity of operations, including continued delivery of government services	• Temporary disruption of government services if buildings are damaged or access is blocked. • Delays in public services and response efforts due to unrest.
Cascading hazards	• Potential for vandalism, fires, or public safety risks if unrest escalates. • Social tensions leading to longer-term community divisions or future unrest.

3.4.16 Space Weather

Probability	Population Impact	Property Impact	Economy Impact	Overall Hazard Ranking
1.19	1.06	1.13	1.19	4.02

3.4.16.1 Description

Space weather refers to the environmental conditions in space, primarily involving solar activity, that can affect Earth's atmosphere, technology, and systems. The sun regularly emits energy in the form of solar flares, solar wind, and coronal mass ejections (CMEs), which release charged particles and radiation into space. When these particles reach Earth, they can disrupt the planet's magnetic field and atmosphere, impacting satellite communications, GPS systems, power grids, and even air travel.

Space weather is important because modern society relies heavily on technology and infrastructure that can be affected by these solar events. Disruptions to communications, navigation systems, or power grids could have significant consequences for global industries, emergency services, and daily life. Understanding space weather helps governments, businesses, and scientists prepare for and mitigate the potential impacts of these events, ensuring that critical services remain operational during periods of heightened solar activity.

3.4.16.2 Location

The whole planning area is equally susceptible to the impacts of space weather, as the effects of solar activity, such as geomagnetic storms, can potentially affect critical infrastructure regardless of specific location. However, areas with significant reliance on electrical grids and communications systems may experience more noticeable disruptions. For example, towns like Anamosa and Monticello, where more residents rely



on electricity, telecommunications, and GPS services, could be more affected by outages or signal disruptions caused by space weather.

Additionally, rural areas that rely on satellite-based technologies for farming operations or transportation may be vulnerable to GPS and communication disruptions. While space weather is a global phenomenon, its local impacts would most likely be felt in terms of service interruptions affecting daily life, communications, and possibly emergency response systems.

Applicable Jurisdictions	
Unincorporated Jones County	City of Oxford Junction
City of Anamosa	City of Wyoming
City of Martelle	Anamosa CSD
City of Monticello	Midland CSD
City of Morley	Monticello CSD
City of Olin	Olin CSD
City of Onslow	Sacred Heart School
	St. Patrick School

Applicable Not Applicable

3.4.16.3 Magnitude/Severity

The magnitude and severity of space weather events are typically measured by the intensity of solar activity and its impact on Earth's systems. These events are categorized based on the type of space weather—such as solar flares, geomagnetic storms, and solar radiation storms—and their potential to disrupt technology and infrastructure. Solar flares are measured using the X-ray flux, with classifications ranging from minor (C-class) to major (X-class), where X-class flares are the most intense. Geomagnetic storms, caused by disturbances in Earth’s magnetic field, are measured using the Kp index, a scale from 0 to 9 that indicates the severity of the disturbance, with higher numbers signifying stronger geomagnetic storms. The severity of geomagnetic storms is also assessed using the G-scale, which ranges from G1 (minor) to G5 (extreme), based on the storm’s ability to disrupt power grids, satellite operations, and radio communications.

- Kp 0-2: Quiet geomagnetic conditions.
- Kp 3: Unsettled geomagnetic conditions.
- Kp 4: Active geomagnetic conditions.
- Kp 5 (G1): Minor geomagnetic storm. Potential for minor power grid fluctuations and auroras visible at higher latitudes.
- Kp 6 (G2): Moderate geomagnetic storm. Some power grid issues, spacecraft operations may need correction, and auroras visible at lower latitudes.

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- Kp 7 (G3): Strong geomagnetic storm. Power grid disruptions, voltage issues, and more significant impacts on satellites and radio communications.
- Kp 8 (G4): Severe geomagnetic storm. Widespread voltage control issues in power grids, satellite navigation issues, and auroras visible far from polar regions.
- Kp 9 (G5): Extreme geomagnetic storm. Possible widespread power system failures, severe GPS errors, and auroras visible at much lower latitudes.

Solar radiation storms are measured by the intensity of high-energy particles in space, typically using the S-scale, which ranges from S1 (minor) to S5 (extreme), indicating the potential risks to astronauts, satellites, and aviation. The combination of these scales allows scientists to assess the potential impacts of space weather events on technology, communications, and infrastructure on Earth, and helps organizations prepare and respond to any disruptions caused by heightened solar activity.

- S1 (Minor): Minor impact. Small, temporary effects on satellite operations; minor impact on polar high-frequency radio communication.
- S2 (Moderate): Moderate impact. Passengers and crew at high altitudes and polar routes may experience increased radiation exposure; satellite operations may experience problems.
- S3 (Strong): Strong impact. Potential disruptions in satellite operations and navigation; increased radiation exposure for passengers and crew on polar flights.
- S4 (Severe): Severe impact. High risk for satellite malfunctions, blackout of high-frequency radio communications in polar regions, and high radiation doses for astronauts or passengers on polar flights.
- S5 (Extreme): Extreme impact. Significant damage to satellites, GPS degradation, possible radio communication blackouts over large areas, and dangerous radiation levels for astronauts.

3.4.16.4 Past Occurrences

Reviewing past occurrences of space weather incidents, both locally and regionally, helps the planning area better prepare for future events by understanding the potential disruptions these hazards can cause. While significant impacts from space weather have not been widespread in the planning area, past events, such as the 1989 and 2003 geomagnetic storms, demonstrate how solar activity can affect power grids, satellite communications, and GPS systems across large areas, including the Midwest. These historical incidents, though not always directly affecting the planning area, provide valuable insights into how space weather can disrupt critical infrastructure and highlight the importance of preparedness for mitigating such risks. By studying these events, local

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authorities and organizations can improve response plans, enhance communication systems, and ensure that key services remain operational during space weather events.

- March 13, 1989 (North America): A severe geomagnetic storm, caused by a coronal mass ejection (CME), led to widespread power grid failures in Quebec, Canada. Although Iowa and the Midwest did not experience power outages, the storm caused minor disruptions to satellite communications and radio signals across North America. Auroras were visible as far south as Iowa, a rare occurrence due to the storm's intensity.
- October 29-30, 2003 (Halloween Solar Storms): A series of strong solar flares and CMEs caused geomagnetic storms that affected GPS systems and high-frequency radio communications in the Midwest, including Iowa. Airline flights were rerouted away from polar routes due to increased radiation levels, and the storm caused disruptions in satellite operations. Auroras were visible across much of the Midwest, including Iowa.
- August 4-5, 1972 (Solar Flare and Geomagnetic Storm): A powerful solar flare led to a geomagnetic storm that caused temporary disruptions to telecommunications, including radio signals in parts of the Midwest. The event was notable for disrupting long-distance telephone lines and causing voltage irregularities in power grids, including those serving Midwestern states like Iowa.
- September 7-8, 2017 (Solar Flare and CME): A significant solar flare caused radio blackouts and GPS signal disruptions across the U.S., including in the Midwest. While Iowa did not experience major infrastructure failures, airlines flying over the Midwest rerouted polar flights to avoid high radiation exposure, and satellite communication was impacted for brief periods.

3.4.16.5 Likelihood of Future Occurrence

The likelihood of future space weather events impacting the planning area is relatively low but not impossible, based on local, regional, and state information. Space weather events, such as geomagnetic storms and solar flares, occur periodically due to solar activity, which follows an 11-year cycle. During periods of heightened solar activity, the likelihood of geomagnetic storms increases. While the impacts of these storms tend to be more severe in regions closer to the poles, areas like the planning area could still experience disruptions to satellite communications, GPS signals, and, in extreme cases, power grid fluctuations.

Historically, the Midwest, including Iowa, has seen minor effects from significant space weather events, with disruptions to radio communications, airline navigation, and satellite operations. Given the growing reliance on technology, particularly satellite-based

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systems and the power grid, the potential for future space weather disruptions is always present. However, the probability of severe, long-lasting effects in the planning area remains low, but preparedness is key, particularly during solar maximum phases when the sun's activity peaks. Therefore, monitoring space weather forecasts and preparing for minor disruptions can help mitigate the impact should such an event occur.

3.4.16.6 Climate Change Considerations

There are no direct climate change considerations for space weather, as it is a solar-driven phenomenon and not influenced by Earth's climate. Space weather events, such as solar flares, geomagnetic storms, and coronal mass ejections, originate from the sun and are not impacted by atmospheric or climate changes on Earth. While climate change can affect weather patterns, ecosystems, and human systems, it does not alter the likelihood or severity of space weather events. However, indirect considerations may arise if climate-related disruptions compound the effects of space weather on infrastructure, such as power grids or communication systems. In essence, while climate change is an important factor in many natural hazards, it does not play a role in the occurrence or behavior of space weather.

3.4.16.7 Vulnerability

People

The impact of space weather on the general population would primarily involve disruptions to technology and services rather than direct physical harm, but vulnerable and underserved populations could experience significant secondary effects. Power outages caused by geomagnetic storms affecting the electrical grid could leave households without electricity for hours or even days, disproportionately impacting older adults, individuals with disabilities (13.1%), and those reliant on electrically powered medical devices. Low-income households (11.4%) and renters who lack backup power sources may be at greater risk of extreme heat or cold if heating and cooling systems fail, while residents of mobile homes (5.14%) could face heightened exposure to extreme temperatures due to poor insulation.

Communication system failures, including GPS, cell phone service, and internet disruptions, could create barriers for underserved populations, particularly those who rely on digital services for telemedicine, remote work, or public assistance programs. Emergency response coordination could be delayed, putting individuals with mobility limitations or those living in rural areas at greater risk if they cannot call for help or receive timely updates. Residents without personal transportation (1.4%) may struggle to

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navigate roadways safely if GPS services fail, impacting their ability to reach medical appointments, workplaces, or essential services.

While the immediate health risk from space weather is low, widespread technological disruptions could increase isolation and anxiety, particularly for older adults and individuals with cognitive impairments, who may struggle to adapt to temporary service failures. Ensuring equitable access to backup communication resources, emergency energy assistance, and public safety information will be critical in minimizing the disproportionate impact on at-risk residents during space weather-related events.

Economy

The economic impact on the planning area could stem from disruptions to key infrastructure and technology-dependent industries. Power outages could lead to temporary closures of businesses, resulting in lost revenue, particularly for small businesses, manufacturing, and service providers. Agricultural operations, which rely increasingly on GPS for precision farming and satellite-based technologies, could face delays in planting, harvesting, or equipment use if GPS systems are disrupted. Additionally, communication and internet outages could affect daily business operations, such as financial transactions, logistics, and communication with suppliers or customers.

If the space weather event caused extended power grid failures or significant disruption to communication networks, recovery costs could further strain local government and businesses. While the planning area is more rural and less reliant on large-scale technology infrastructure than urban areas, any significant disruption could still slow economic activity and create challenges for businesses and residents. Overall, while space weather would not likely cause long-term damage, the short-term economic effects could be noticeable, especially for sectors reliant on uninterrupted power and technology.

Built Environment

General Property

If a significant space weather event were to occur in the planning area, it is unlikely that there would be a direct impact on property values in the planning area. Space weather events, such as geomagnetic storms, primarily affect technology and infrastructure rather than causing physical damage to homes or property. Unless the event caused long-term disruptions to power grids or communication systems, it would not affect the desirability or value of properties in the area.

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However, if space weather disruptions became a recurring issue and led to ongoing problems with infrastructure, such as frequent power outages or communication failures, there could be a slight reduction in property values in areas most affected. Overall, the likelihood of significant or lasting impacts on property values from space weather in the planning area remains low.

Critical Infrastructure

The impact on critical infrastructure in the planning area could be considerable, particularly in relation to the power grid and communications systems. Geomagnetic storms can induce electric currents in power lines, potentially causing transformer failures or widespread power outages. Although the planning area is part of a larger regional power grid, a strong enough geomagnetic storm could disrupt electricity service, affecting homes, businesses, and essential services.

Communications systems, including cell phone networks, internet services, and satellite-based systems like GPS, could also be impacted. This could result in temporary loss of GPS navigation, interruptions in telecommunications, and difficulties with emergency response coordination, particularly for services relying on real-time data or satellite technology.

Additionally, emergency services and public safety operations could face challenges if power outages and communication breakdowns hamper the ability to respond to incidents or maintain essential services. Water treatment and wastewater facilities, reliant on electrical systems, could be disrupted, leading to potential water supply issues if backup systems fail.

While the direct physical damage to infrastructure would likely be minimal, the cascading effects of service interruptions on power, communications, and emergency response would be the main concerns in the planning area during a significant space weather event.

Historical, Cultural, and Natural Environment

The historical, cultural, and natural environment in the planning area would likely experience minimal direct impact from space weather events. Unlike natural disasters that cause physical damage to structures or landscapes, space weather primarily affects technology and infrastructure, meaning historical buildings, museums, and cultural landmarks such as the Anamosa State Penitentiary Museum, Grant Wood Art Gallery in

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Stone City, and the Wyoming Historical Museum would not face structural harm from the event itself.

However, indirect impacts could occur if power outages or communication failures disrupt access to cultural institutions or historical sites. Museums, libraries, and community centers such as the Monticello Heritage and Cultural Center or Lawrence Community Center may temporarily close due to lack of power, internet, or security systems, limiting public access to cultural and historical resources. Additionally, disruptions to emergency communication systems could delay protective actions or response efforts if an issue arises at a historical site.

The natural environment would remain largely unaffected, as space weather does not directly impact ecosystems, landscapes, or wildlife. However, if extended power grid failures were to occur, disruptions to environmental monitoring systems, weather stations, or conservation equipment used in areas such as Wapsipinicon State Park or Pictured Rocks County Park could temporarily hinder conservation efforts. Despite these minor concerns, the overall impact of space weather on the planning area's historical, cultural, and natural resources would be minimal compared to other hazards.

Future Land Use and Development

If a significant space weather event were to occur in the planning area, it is unlikely that there would be a direct impact on future land use and development in the planning area. Space weather primarily affects technology and infrastructure, such as power grids and communications systems, rather than the physical environment or land itself. As a result, there would be no immediate need to alter land use plans, zoning regulations, or development strategies in response to space weather.

However, indirect considerations could arise if the event reveals vulnerabilities in local infrastructure, such as power systems or communications networks, that developers or planners might address in future projects. For example, if power grids are significantly disrupted, future developments might incorporate more resilient infrastructure, such as enhanced electrical systems or backup power sources, to mitigate potential disruptions from future space weather events. Additionally, critical facilities like hospitals, emergency response centers, or telecommunications hubs might be designed with better safeguards against such technological disruptions.

Overall, while the direct impact of space weather on future land use and development is minimal, any changes would likely focus on improving the resilience of infrastructure rather than altering the land itself or how it is developed.

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3.4.16.8 Consequence Summary

If a significant space weather event were to occur in the planning area, the consequences for the planning area would primarily involve disruptions to critical infrastructure and technology-dependent services. Power outages could occur, affecting homes, businesses, and essential services, while communication systems, including cell phones, internet, and GPS, could experience temporary interruptions. This could hinder daily activities, emergency response coordination, and certain agricultural operations reliant on satellite technology. Although the event would likely not cause direct physical damage to property or the environment, the resulting service disruptions could strain local resources and create short-term challenges for residents and businesses. Preparedness and resilience in infrastructure would be key to mitigating the impacts of such an event.

Category	Narrative
Impact on the Public	- Power outages and communication disruptions could affect daily life. - Limited access to GPS and internet services.
Impact on the Economic Condition of the Planning Area	- Temporary business closures and financial losses due to power and communication outages. - Disruptions in agriculture, especially in GPS-reliant farming.
Impact on the Historical, Cultural, and Natural Environment	- Minimal direct impact on historical or cultural sites. - Temporary closures of museums or cultural institutions due to power or communication outages.
Impact on Built Environment, General Property, and Critical Infrastructure	- Little to no direct effect on property values. - Power grids and communications systems vulnerable to disruption.
Impact on the Public Confidence in Government	- Potential erosion of public trust if response to outages is slow or ineffective. - Increased demand for improved infrastructure resilience. - Challenges in coordinating emergency responses due to disrupted communication systems.
Impact on Responders	Increased pressure on first responders to handle infrastructure disruptions.
Impact on continuity of operations, including continued delivery of government services	- Temporary suspension of services due to power and communication outages. - Delays in response times and public communication.

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Category	Narrative
Cascading hazards	• Possible failure of critical systems like water treatment or emergency communications. • Disruptions in essential services leading to heightened public safety concerns.

3.4.17 Supply Chain Disruption

Probability	Population Impact	Property Impact	Economy Impact	Overall Hazard Ranking
1.69	1.56	1.56	1.56	7.91

3.4.17.1 Description

Many of the goods and services people rely on in their daily lives depend on lengthy processes and systems that keep the supply chain flowing. The modern “Just in Time” economy has made supply chains more interconnected than ever, while also expanding both their range and fragility. When it comes to supply chains, supply chain stakeholders are experienced in interruptions of all types- from transportation of materials and finished goods from weather impacts; to staffing shortages delaying production, shipping, and unloading; to drastic fluctuations of supply versus demand based on potential storms, holiday or seasonal needs, and public popularity. Due to the national and international nature of many supply chains, disasters in other states or even other countries can result in disruption of services in the planning area. A 2020 study by the National Academies of Sciences, Engineering and Medicine concluded “Resilient supply chains are crucial to maintaining the consistent delivery of goods and services to the American people.”

All critical infrastructure sectors are at risk of supply chain disruptions, and supply chain disruptions can put critical infrastructure assets (even entire sectors) at risk. The economic crisis of 2007-2008 across the nation may be seen as a critical infrastructure sector failure (financial sector), with supply chain disruptions attached (housing market crash). Winter storms in the planning area may increase demand for gasoline or diesel fuel to heat generators and natural gas to heat homes, while simultaneously disrupting the fuel supply chain’s ability to deliver and distribute fuel in the community.

3.4.17.2 Location

The planning area may be more susceptible to supply chain disruptions due to their reliance on transportation, agriculture, and local businesses. Agricultural operations,

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which are a cornerstone of the local economy, could be heavily affected by disruptions in the supply chain, particularly if access to equipment, fertilizers, feed, or other critical supplies is delayed. Farmers in rural areas may face challenges in obtaining necessary materials, especially if road networks or delivery services are interrupted.

Local businesses, particularly those in Anamosa, Monticello, and other small towns, could also be vulnerable to supply chain disruptions, especially those that rely on external suppliers for inventory, products, or raw materials. These businesses may face stock shortages or delays that impact their ability to operate smoothly.

Additionally, healthcare facilities and emergency services could experience challenges if vital medical supplies, equipment, or pharmaceuticals are delayed or disrupted, affecting their ability to provide essential services.

Applicable Jurisdictions	
Unincorporated Jones County	City of Oxford Junction
City of Anamosa	City of Wyoming
City of Martelle	Anamosa CSD
City of Monticello	Midland CSD
City of Morley	Monticello CSD
City of Olin	Olin CSD
City of Onslow	Sacred Heart School
	St. Patrick School
Applicable Not Applicable	

3.4.17.3 Magnitude/Severity

The magnitude and severity of supply chain disruption are typically measured by the extent of the impact on the flow of goods, the duration of the disruption, and the sectors affected. Geographic scope plays a key role—disruptions that affect multiple regions, countries, or continents are considered more severe than localized issues. Duration is another critical factor, with short-term interruptions generally causing less impact than prolonged disruptions that last weeks or months.

The economic impact is often used to gauge the severity, with larger disruptions resulting in significant financial losses for businesses and industries. This can include delayed production, increased costs for raw materials, or shortages that impact the consumer market. The industries affected also determine the severity, with disruptions to critical sectors like healthcare, food supply, and energy being particularly severe due to their importance in sustaining essential services.

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Finally, response and recovery time is an indicator of the disruption's severity. If a disruption causes widespread delays in restoring normal operations, it is considered more severe, especially if it impacts vulnerable populations or critical infrastructure. In summary, the magnitude and severity of supply chain disruptions are measured by geographic reach, duration, economic impact, affected sectors, and the time it takes to restore normal operations.

3.4.17.4 Past Occurrences

Reviewing past occurrences of supply chain disruptions, both locally and regionally, allows the planning area to better prepare for future incidents by understanding the vulnerabilities in transportation networks, agriculture, and critical goods distribution. Events such as the 2020 derecho and Midwest flooding demonstrate how severe weather and natural disasters can halt the flow of goods, delay critical supplies, and create cascading impacts on local businesses and communities. While not all events are specific to the planning area, these examples provide valuable insights into the fragility of supply chains and the need for robust contingency planning, such as identifying alternative transportation routes, securing emergency stockpiles, and improving coordination among stakeholders. By studying these events, the planning area can improve resilience to future disruptions and ensure a quicker recovery when supply chain issues arise.

Here are examples of significant supply chain disruption incidents in Iowa and the Midwest:

- April 2019 (Midwest Flooding): Severe flooding in Iowa and other parts of the Midwest disrupted major transportation routes, including highways and railways, leading to delays in the delivery of agricultural products, fuel, and other goods. Many farmers experienced delays in planting crops due to seed and fertilizer shortages, impacting the agricultural supply chain throughout the region.
- March 2020 (COVID-19 Pandemic): The onset of the COVID-19 pandemic caused widespread supply chain disruptions in Iowa and across the Midwest. Restrictions on movement, labor shortages, and factory shutdowns delayed shipments of essential goods, including medical supplies, food, and manufacturing materials. Meatpacking plants in Iowa were particularly affected, leading to disruptions in the food supply chain, with shortages and price increases felt nationwide.
- August 10, 2020 (Derecho Storm): A powerful derecho storm swept across Iowa, causing widespread damage to infrastructure, crops, and businesses. The storm disrupted transportation routes, power supplies, and communication systems, creating significant delays in the movement of goods across the region. The

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agricultural supply chain was particularly hard hit, with massive damage to grain storage facilities, leading to further supply chain bottlenecks.

- 2011 (Mississippi River Flooding): Flooding along the Mississippi River affected barge traffic, an important transportation method for grain and other bulk goods from Iowa and the Midwest. The flooding caused delays and increased shipping costs, disrupting the agricultural supply chain and impacting the movement of goods to domestic and international markets.

3.4.17.5 Likelihood of Future Occurrence

The likelihood of future supply chain disruptions in the planning area is moderate based on local, regional, and state information. Supply chains are highly sensitive to disruptions caused by natural disasters, economic shifts, or global events, many of which are unpredictable but recurring. The planning area, like much of Iowa, is heavily reliant on transportation networks for the movement of agricultural products, manufactured goods, and essential supplies. The region has experienced significant disruptions in the past due to events such as severe weather, including flooding and storms, which are frequent in the Midwest. Given that climate models predict increased frequency and intensity of extreme weather events in the future, the potential for local supply chain disruptions is likely to remain.

On a broader scale, Iowa's economy, including the planning area, is interconnected with national and global supply chains, making it vulnerable to disruptions outside the region, such as labor shortages, pandemics, or geopolitical events. The COVID-19 pandemic, for example, highlighted the fragility of global supply chains and their impact on local economies. As global and regional supply chains become more complex, the potential for disruptions persists, emphasizing the importance of planning and resilience strategies in the planning area to mitigate the impact of future supply chain disruptions.

3.4.17.6 Climate Change Considerations

While supply chain disruption is not directly caused by climate change, there are indirect considerations to take into account. Climate change is expected to increase the frequency and intensity of extreme weather events, such as floods, storms, and droughts, which can disrupt transportation routes, damage infrastructure, and delay the delivery of goods. For the planning area and the broader region, this means that the agricultural supply chain—critical to the local economy—could face more frequent interruptions due to weather-related damage to crops or transportation networks. Additionally, climate change may affect global supply chains by disrupting the production of goods in regions that are vulnerable to climate impacts, creating shortages or delays that could affect local

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economies. While not the direct cause of supply chain disruptions, climate change is likely to exacerbate factors that contribute to these disruptions, making resilience planning increasingly important.

3.4.17.7 Vulnerability

People

The impact of supply chain disruptions on the general population could be significant, with vulnerable and underserved populations experiencing the most severe consequences. Shortages of food, fuel, medical supplies, and other critical goods would disproportionately affect low-income households (11.4%), who may lack the financial flexibility to absorb sudden price increases or stockpile essentials. Older adults, individuals with disabilities (13.1%), and those with chronic illnesses could face delays in receiving necessary medications or medical equipment, putting their health and well-being at risk. Households without personal transportation (1.4%) may also struggle to travel longer distances to find alternative sources of food, fuel, or medication if local supplies become limited.

Healthcare facilities and pharmacies could experience delays in receiving essential supplies, impacting patients reliant on life-sustaining treatments such as insulin, oxygen, or prescription medications. Residents of assisted living facilities or those dependent on home healthcare services may face greater health risks if medical supply chains are disrupted. Limited access to baby formula, nutritional supplements, or hygiene products could also disproportionately affect low-income families, single-parent households, and individuals relying on public assistance programs.

The psychological toll of supply shortages, rising costs, and prolonged uncertainty could increase stress and anxiety across the community, particularly for underserved populations already struggling with financial insecurity or food instability. Without equitable access to emergency assistance programs, community food resources, and healthcare supply reserves, vulnerable residents may experience prolonged hardship and greater difficulty recovering from sustained disruptions.

Economy

The impact on the economy in the planning area could be significant, particularly in industries reliant on the consistent flow of goods and services. Agriculture, a key sector in the local economy, could be heavily affected if farmers are unable to access necessary inputs such as seeds, fertilizers, equipment parts, and fuel. This could delay planting and

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harvesting schedules, leading to reduced crop yields, financial losses, and long-term economic strain for the farming community.

Local businesses, particularly retailers and manufacturers, could experience shortages of products or raw materials, leading to interruptions in their ability to operate. This could result in decreased sales, revenue loss, and potential layoffs, affecting the local workforce. Small businesses that lack the resources to weather prolonged disruptions might face closures, further weakening the local economy.

Furthermore, supply chain disruptions could lead to price increases for essential goods, which would impact both consumers and businesses. Higher costs for materials or inventory could squeeze profit margins, while rising prices on consumer goods could reduce household purchasing power. Over time, a significant or prolonged disruption could reduce economic growth, slow recovery efforts, and put added pressure on local governments to support affected industries and communities.

Built Environment

General Property

The impact on property values in the planning area would likely be minimal in the short term, but prolonged or repeated disruptions could have indirect effects. Supply chain disruptions, especially if they lead to economic slowdowns, business closures, or reductions in agricultural output, could diminish the overall economic vitality of the region. This, in turn, could make certain areas less attractive to potential homebuyers or investors, particularly if local industries are significantly impacted.

For example, if agriculture—a key driver of the local economy—were to suffer long-term difficulties due to disruptions in the availability of essential supplies, it could reduce economic growth, which might influence property demand in rural or farming areas. Similarly, if local businesses are forced to close due to a lack of inventory or higher operating costs, the economic downturn could cause property values in affected commercial and residential areas to stagnate or decline slightly.

However, unless the disruption is severe or prolonged, it is unlikely that supply chain issues alone would result in significant declines in property values across the county. The effect on property values would likely depend more on the overall economic impact and the duration of the disruption rather than direct damage to property itself.

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Critical Infrastructure

The impact on critical infrastructure in the planning area could be significant, particularly if the disruption affects the delivery of essential materials and services needed for infrastructure maintenance and operations. Transportation networks, such as roads and bridges, rely on regular maintenance that requires access to construction materials, fuel, and equipment. If these supplies are delayed or unavailable due to supply chain disruptions, infrastructure projects could be postponed, leading to deterioration of roads and bridges, which could further hinder transportation and logistics.

Energy infrastructure, including the local power grid, could also be affected if disruptions lead to shortages of fuel, replacement parts, or equipment required for repairs and maintenance. This could increase the risk of outages or system failures, particularly if critical repairs are delayed due to supply shortages.

In addition, communication systems and emergency services could face challenges if supply chain disruptions affect the availability of backup power supplies, communication equipment, or emergency medical supplies. This could lead to slower response times or limitations in service during emergencies, impacting public safety.

Overall, while supply chain disruptions may not directly damage the infrastructure itself, the lack of access to necessary materials and resources for maintenance and repairs could have a cascading effect, weakening the resilience of the planning area's critical infrastructure over time.

Historical, Cultural, and Natural Environment

The direct impact of supply chain disruptions on the historical, cultural, and natural environment of the planning area would likely be minimal, but indirect effects could arise if necessary resources for maintenance or protection become scarce.

For historical sites and cultural institutions, such as the Anamosa State Penitentiary Museum, Grant Wood Art Gallery in Stone City, and Wyoming Historical Museum, delays in obtaining building materials, conservation supplies, or restoration equipment could hinder preservation efforts. Specialized materials needed for historic structure repairs, such as custom masonry, period-accurate woodwork, or archival-grade preservation materials, may become difficult to source, leading to deterioration of aging landmarks. Extended supply chain issues could also impact libraries, community centers, and museums, delaying exhibit updates or preservation projects due to a lack of storage materials or display infrastructure.

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The natural environment could also be affected if supply chain disruptions impact environmental management projects in areas such as Wapsipinicon State Park, Pictured Rocks County Park, and Indian Bluffs State Preserve. Delays in erosion control efforts, habitat restoration, or reforestation projects could lead to soil degradation, loss of native species, and increased vulnerability to other hazards. Additionally, if equipment or maintenance supplies for park facilities and trails are delayed, it could reduce public access to these natural areas and hinder conservation work. While the natural and cultural environments may not be directly harmed, their long-term management and preservation could face challenges if critical materials and services are unavailable or delayed.

Future Land Use and Development

The impact on future land use and development in the planning area could be notable, particularly if the disruption is prolonged or affects key industries. Construction projects, both residential and commercial, rely heavily on a steady supply of materials such as lumber, steel, concrete, and other building supplies. A disruption could lead to delays in these projects, increasing costs and potentially slowing the pace of development. This could result in reduced availability of new housing or commercial spaces, which might influence broader economic growth and planning in the area.

Agricultural development could also be impacted, as farms and agricultural businesses rely on the timely delivery of equipment, seed, and inputs like fertilizer. Delays or shortages of these materials could hinder land use decisions, as farmers may struggle to maintain or expand their operations. In the longer term, sustained supply chain disruptions could discourage investment in agricultural development or modernization, impacting the county's economic reliance on this sector.

From a planning perspective, supply chain disruptions might encourage local governments and developers to rethink infrastructure resilience and the sourcing of construction materials. Future development could focus on strengthening local supply chains, using more readily available materials, or improving storage and logistics capabilities to mitigate the effects of future disruptions. While land use patterns might not change immediately, prolonged disruptions could prompt a shift toward more resilient and sustainable development practices.

3.4.17.8 Consequence Summary

If a supply chain disruption were to occur in the planning area, the consequences for the planning area could be widespread, affecting various aspects of daily life and the local economy. Delays in receiving essential goods, such as food, fuel, and medical supplies, could cause shortages and price increases, impacting both businesses and residents. Agriculture, a key economic driver, might experience significant setbacks due to difficulties in obtaining equipment, seeds, and fertilizers, leading to lower productivity and financial strain for farmers. Additionally, local businesses reliant on external suppliers could face operational challenges or closures, reducing economic activity and employment. Critical infrastructure, including transportation networks and energy systems, could experience maintenance delays, potentially weakening the county's resilience over time. Overall, while not directly damaging, supply chain disruptions could significantly affect economic stability, infrastructure, and public well-being in the planning area.

Category	Narrative
Impact on the Public	- Shortages of essential goods (food, fuel, medical supplies). - Increased prices for consumer goods, straining household budgets.
Impact on the Economic Condition of the Planning Area	- Delays or interruptions in agricultural production due to lack of supplies. - Operational challenges or closures for local businesses reliant on external suppliers.
Impact on the Historical, Cultural, and Natural Environment	- Delayed maintenance and preservation efforts for historical sites and cultural institutions. - Potential delays in environmental management projects affecting natural areas.
Impact on Built Environment, General Property, and Critical Infrastructure	- Minimal short-term impact on property values but potential long-term effects if economic conditions worsen. - Delays in infrastructure maintenance could weaken transportation and energy systems.
Impact on the Public Confidence in Government	Erosion of trust if the response to shortages or disruptions is slow or ineffective.
Impact on Responders	Difficulty in accessing necessary supplies, equipment, or resources for emergency services.
Impact on continuity of operations, including	Potential delays in government services due to shortages of materials or equipment.

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Category	Narrative
continued delivery of government services	
Cascading hazards	• Prolonged disruptions leading to economic downturns, public unrest, or challenges in maintaining critical services.

3.4.18 Terrorism and Mass Violence

Probability	Population Impact	Property Impact	Economy Impact	Overall Hazard Ranking
1.38	1.56	1.31	1.31	5.77

3.4.18.1 Description

Terrorism, mass violence, bioterrorism, and agroterrorism refer to deliberate acts intended to cause widespread fear, harm, or disruption, often targeting civilians, infrastructure, or key sectors of society. Terrorism often involves politically, ideologically, or religiously motivated attacks designed to influence governments, spread fear, or further an agenda through violence. Mass violence typically refers to incidents such as shootings or bombings that result in harm or death to large numbers of people, and may or may not have political or ideological motivations.

Bioterrorism involves the intentional release of harmful biological agents—such as bacteria, viruses, or toxins—designed to cause illness or death, spread disease, and disrupt public health and healthcare systems. Similarly, agroterrorism targets agricultural systems by intentionally contaminating or destroying crops, livestock, or food supplies to weaken the economy and create widespread food insecurity.

These hazards are important because they pose significant threats to public safety, health, and the economic stability of communities. Terrorism and mass violence can cause direct loss of life and psychological trauma, while bioterrorism and agroterrorism can disrupt essential services, overwhelm healthcare and public health systems, and threaten food security. Understanding these hazards is crucial for emergency preparedness, ensuring public safety, and mitigating the risks to critical infrastructure, public health, and the economy in the event of an attack.

3.4.18.2 Location

In the planning area, certain areas are more susceptible to terrorism and mass violence based on population density, public spaces, and key facilities. While the overall risk is

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lower than in urban areas, there are still specific locations that could be considered more vulnerable:

- **Agricultural Areas:** Jones County’s agricultural industry is a potential target for agroterrorism, particularly large farms, livestock operations, and food processing facilities. The intentional contamination of crops or livestock, or disruption to agricultural supply chains, could have devastating economic impacts and disrupt the local food supply.
- **Anamosa State Penitentiary:** As a large correctional facility, the Anamosa State Penitentiary is a sensitive site where incidents of terrorism or mass violence could occur, either from internal unrest or external attacks. The facility’s high concentration of people and security-sensitive nature makes it vulnerable to potential violence or sabotage.
- **Public Spaces and Government Buildings:** Courthouses, city halls, and other government buildings in towns like Anamosa and Monticello could be potential targets for politically motivated attacks or mass violence, especially during public events or high-profile gatherings. These locations are critical to public operations and often host public figures, making them more vulnerable.
- **Schools and Educational Facilities:** Schools and educational institutions in the county, like in many rural and urban areas, are vulnerable to incidents of mass violence, such as shootings or other attacks. These locations often have high concentrations of people and can be targeted for ideological or personal reasons.
- **Healthcare Facilities:** Hospitals and clinics in the county could be susceptible to bioterrorism if there is an intentional release of harmful biological agents. These facilities would be crucial in responding to an outbreak, but they could become overwhelmed if targeted directly or if they are the central hub for managing a large-scale biological attack.
- **Agricultural Markets and Supply Chains:** Any location involved in the processing, distribution, or storage of agricultural goods may be susceptible to agroterrorism, as attacks could cripple the local economy, harm food security, and create widespread panic.

While the planning area is a more rural area, mass violence can occur in any community, and these locations—especially schools, public events, and government buildings—are typically considered more vulnerable. Preparedness and planning efforts should focus on these key areas to enhance security and ensure the safety of residents.

Applicable Jurisdictions	
Unincorporated Jones County	City of Oxford Junction
City of Anamosa	City of Wyoming

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Applicable Jurisdictions	
City of Martelle	Anamosa CSD
City of Monticello	Midland CSD
City of Morley	Monticello CSD
City of Olin	Olin CSD
City of Onslow	Sacred Heart School
	St. Patrick School
Applicable Not Applicable	

3.4.18.3 Magnitude/Severity

The magnitude and severity of terrorism, mass violence, bioterrorism, and agroterrorism are typically measured based on several factors, including the scale of the incident, the number of casualties, and the extent of disruption caused to the community or economy. One of the primary indicators is the number of fatalities and injuries, which reflects the direct human toll of the event. The severity is also determined by the type of target—incidents that target critical infrastructure, public spaces, or essential sectors like agriculture or healthcare are considered more severe due to their broader societal and economic impacts.

In cases of bioterrorism or agroterrorism, the spread of disease or contamination is a key measure of severity, as these events can lead to widespread illness, loss of livestock, or crop destruction. The duration of the outbreak or contamination and the speed of response are critical factors, as longer-lasting incidents can lead to more significant health crises and economic losses.

Another factor in measuring severity is the economic cost of the event, which includes the direct damage to infrastructure, agricultural losses, healthcare expenses, and the cost of emergency response and recovery efforts. Additionally, the psychological impact on the community, including fear, anxiety, and long-term trauma, is an important aspect in assessing severity.

The geographic spread of the event is also a measure, with incidents affecting larger areas or multiple regions being considered more severe. Finally, media coverage and political or societal ramifications can further amplify the perceived severity, especially if the event creates widespread fear, disrupts government operations, or leads to long-term changes in policy or behavior.

3.4.18.4 Past Occurrences

Reviewing past occurrences of terrorism and mass violence, both locally and regionally, helps the planning area better prepare for future incidents by identifying vulnerabilities, improving response strategies, and enhancing community awareness. Although some of these events may not be localized to the planning area, they provide valuable lessons on how to strengthen security measures, plan for mass casualty events, and develop coordinated emergency response protocols. Incidents such as the shooting at the University of Iowa or the 2012 Sikh temple attack in Wisconsin highlight the unpredictability of mass violence and the importance of preparedness in public spaces, schools, and government buildings. By studying these past events, the planning area can assess its own vulnerabilities, ensure law enforcement and emergency services are properly trained, and foster community engagement to reduce the risk and impact of future attacks.

Here are examples of significant terrorism and mass violence incidents in Iowa and the Midwest:

- July 24, 2018 (Ames, Iowa): A gunman opened fire in the parking lot of an Iowa State University sorority house, killing two women before taking his own life. This incident of mass violence raised concerns about gun violence on college campuses and impacted the local community's sense of safety.
- August 5, 2012 (Oak Creek, Wisconsin): A white supremacist opened fire at a Sikh temple, killing six worshipers and injuring several others before being killed by police. This act of domestic terrorism targeted a religious community, leading to national conversations about hate crimes and extremist violence.
- November 1, 1991 (University of Iowa, Iowa City): A former graduate student went on a shooting spree in the university's physics department, killing five people, including three professors, before taking his own life. This tragic incident shocked the academic community and highlighted the dangers of workplace and campus violence.
- August 10, 2020 (Minneapolis, Minnesota): Protests following the police killing of George Floyd turned violent at times, with widespread unrest, looting, and property damage in the Minneapolis area. Though the initial demonstrations were peaceful, instances of violence and destruction impacted businesses and infrastructure, with significant costs to the local economy.
- April 19, 1995 (Oklahoma City, Oklahoma): The bombing of the Alfred P. Murrah Federal Building by anti-government extremists killed 168 people and injured over 600. While this attack occurred outside Iowa, it remains one of the deadliest acts of domestic terrorism in U.S. history and had wide-reaching impacts on the

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Midwest, including enhanced security measures for federal buildings across the region.

- October 2001 (Anthrax Attacks, Nationwide, including Iowa): Letters containing anthrax spores were sent to media outlets and government offices across the U.S., resulting in five deaths and multiple infections. Some anthrax-contaminated letters passed through the U.S. Postal Service's facility in Des Moines, Iowa, raising concerns about the threat of bioterrorism and leading to increased biosecurity measures nationwide.
- 2015 (Iowa Avian Influenza Outbreak): While not an intentional attack, the highly pathogenic avian influenza outbreak affected more than 77 poultry farms in Iowa, leading to the loss of millions of chickens and turkeys. This event highlighted the potential consequences of agroterrorism if an attack were to target agricultural systems, as the outbreak caused significant economic damage and impacted food security.

3.4.18.5 Likelihood of Future Occurrence

The likelihood of future occurrences of terrorism, mass violence, bioterrorism, or agroterrorism in the planning area is considered low but not negligible, based on local, regional, and state information. The planning area is a predominantly rural area with smaller population centers, making it less likely to be a primary target for large-scale terrorism compared to urban areas. Historically, incidents of mass violence or terrorism in Iowa and the Midwest have occurred in larger cities or public institutions, such as universities or religious centers, where higher populations and symbolic targets make them more vulnerable.

However, the risk of mass violence, such as active shooter incidents, remains present in any community, including the planning area, particularly in public spaces like schools, government buildings, or community events. National trends have shown that mass violence can happen in both urban and rural settings, and preparedness is key to mitigating potential impacts.

The county's reliance on agriculture also increases its vulnerability to agroterrorism, which could target crops, livestock, or food processing facilities. While no significant agroterrorism incidents have occurred in Iowa, the state's large agricultural sector makes it a potential target for future attacks that could disrupt food production and supply chains.

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Similarly, while the likelihood of a bioterrorism attack is low, rural counties like the planning area could still be impacted by broader bioterrorism events, particularly if healthcare infrastructure is overwhelmed by disease outbreaks or contamination.

3.4.18.6 Climate Change Considerations

There are no direct climate change considerations for the hazard of terrorism, mass violence, bioterrorism, or agroterrorism, as these threats are driven by human actions and motives, rather than environmental factors. However, indirect considerations may arise in the context of agroterrorism and bioterrorism. Climate change may contribute to economic and resource stress, such as food insecurity, water scarcity, or agricultural instability, which could increase vulnerabilities in critical systems like agriculture. This, in turn, could make these sectors more attractive targets for terrorists seeking to exploit weakened systems. Additionally, climate change could exacerbate social and political tensions globally, potentially leading to increased instances of unrest or extremist violence.

While climate change itself is not a direct driver of terrorism or mass violence, it may create conditions of instability that could indirectly influence these hazards. Nonetheless, terrorism, bioterrorism, and agroterrorism remain primarily human-driven hazards, with no significant or direct connection to climate change.

3.4.18.7 Vulnerability

People

The impact of terrorism and mass violence on the general population would be profound, with vulnerable and underserved populations facing heightened risks to both physical safety and psychological well-being. In the case of mass violence, the immediate and most tragic impact would be loss of life or injury, with long-term emotional and psychological trauma for survivors, families, and the broader community. Older adults, individuals with disabilities (13.1%), and those with mobility limitations may face greater challenges evacuating from an active threat situation. Children, communities of color, and individuals with limited English proficiency (0.4%) may also experience increased anxiety and fear in public spaces, particularly if they are less able to access mental health resources or support services following an incident.

If bioterrorism were to occur, public health consequences could be severe, disproportionately impacting low-income residents (11.4%) and those without health insurance (2.9%), who may face delayed or reduced access to critical medical care.

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Individuals with pre-existing health conditions or disabilities could experience greater risk of severe illness or complications. The implementation of quarantines or restricted movement could disrupt daily life, particularly for those dependent on caregivers, home healthcare services, or public transportation (1.4% of households). Panic and misinformation may further isolate underserved populations, especially those with language barriers who struggle to receive accurate emergency information.

In the event of agroterrorism, attacks on livestock, crops, or food supplies could disproportionately affect low-income families, seniors, and those relying on food assistance programs by reducing access to affordable and nutritious food options. Rural residents dependent on agriculture for their livelihood could face significant disruptions, affecting those already experiencing economic insecurity. Ensuring equitable access to emergency healthcare, mental health support, and accurate information will be critical in reducing the long-term social and psychological impact of terrorism and mass violence on at-risk communities.

Economy

The economic impact could be substantial, particularly in sectors critical to the local economy. Agriculture, being a key industry in the planning area, would be heavily affected in the case of an agroterrorism attack. The intentional contamination or destruction of crops or livestock would lead to significant financial losses for farmers and food processors, potentially disrupting food production and distribution. This could result in a local economic downturn, as agriculture plays a central role in the county's economy.

Additionally, local businesses could suffer from the aftermath of terrorism or mass violence. If the event targets a public space or business district, commercial activity may be halted temporarily due to fear, closures, or investigations, leading to lost revenue. Tourism and public events could also be impacted if the community gains a reputation for being unsafe, deterring visitors and hurting small businesses that rely on local commerce.

In the case of bioterrorism, public health crises would strain the local healthcare system, requiring significant financial resources to manage an outbreak, treat affected individuals, and implement containment measures. The cost of medical supplies, personnel, and infrastructure upgrades could burden local government budgets, further straining the economy.

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Built Environment

General Property

The impact on property values would depend on the severity, location, and duration of the event. In the short term, areas directly affected by the incident, such as public spaces, business districts, or agricultural lands, could experience a temporary decline in property values due to concerns about safety, damage, or contamination. Potential homebuyers or investors might be hesitant to purchase property in areas that have been associated with a high-profile violent or disruptive event.

In the case of bioterrorism or agroterrorism, if the contamination or attack leads to lasting damage to land or agriculture, this could further reduce the desirability of properties in the affected areas, especially farmland or properties located near contaminated sites. The long-term effects on property values would likely depend on the speed and effectiveness of recovery efforts and how well the local community and government respond to the incident.

Public perception plays a key role in property values. If the event leads to a sustained negative perception of the area as unsafe or vulnerable to further attacks, property values could decline, particularly in areas where businesses or schools have been targeted. On the other hand, a well-managed response, with increased security measures and visible recovery, could help restore confidence in the local market, potentially minimizing long-term impacts on property values.

Critical Infrastructure

The impact on critical infrastructure could be significant, depending on the nature and target of the attack.

- Transportation networks such as roads, bridges, and highways could be directly affected if targeted or disrupted during the incident. Blockages or damage to these networks could hinder the movement of emergency responders and essential goods, particularly in a rural area like the planning area where alternative routes may be limited.
- Energy infrastructure, including the local power grid, could be vulnerable if the attack targets power stations or energy transmission lines. A disruption in electricity could cause widespread outages, affecting homes, businesses, and critical services such as hospitals and emergency facilities.

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- Healthcare facilities would play a central role in responding to an incident, especially in cases of mass violence or bioterrorism. These facilities may become overwhelmed by the number of casualties or patients requiring urgent care. If bioterrorism involves the spread of infectious disease, the capacity of local hospitals and clinics to treat and contain the outbreak would be tested, potentially leading to shortages in medical supplies and staff.
- Water and food supply systems could be targeted in agroterrorism or bioterrorism incidents, particularly if an attack involves contamination. Contaminated water sources could lead to public health emergencies, and disruptions to the agricultural supply chain could affect food production and availability.
- Communication systems, including internet and telephone networks, could be impacted if infrastructure is damaged or overwhelmed by increased demand during the emergency response. This could hinder coordination efforts among emergency responders and limit the public's ability to stay informed during the incident.
- While the planning area is less likely to experience large-scale terrorism due to its rural nature, critical infrastructure remains vulnerable, and any attack targeting essential services could have disruptive consequences, even beyond the immediate impact of the violence itself.

Historical, Cultural, and Natural Environment

If an incident of terrorism, mass violence, bioterrorism, or agroterrorism were to occur in the planning area, the historical, cultural, and natural environment could face significant, though potentially indirect, impacts. Historical landmarks and cultural sites, such as the Anamosa State Penitentiary Museum, Grant Wood Art Gallery in Stone City, and the Jones County Courthouse, could be vulnerable to direct attacks, particularly if they are public gathering spaces or symbols of community identity. Damage to these sites could result in the loss of irreplaceable artifacts, documents, or structures, impacting the county's cultural heritage. Additionally, cultural events and community gatherings, such as those held at the Monticello Heritage and Cultural Center or the Lawrence Community Center, may be disrupted or canceled, leading to reduced community engagement and public safety concerns.

In the case of bioterrorism or agroterrorism, the natural environment could suffer long-term damage if biological agents or contaminants are introduced into soil, water, or air. Contaminated water sources, such as the Wapsipinicon River, Whitewater Creek, or Buffalo Creek, could harm aquatic life, disrupt ecosystems, and create public health hazards. Agricultural lands, vital to the local economy, could be targeted, leading to soil contamination, crop destruction, and livestock losses, affecting both food security and

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economic stability. Additionally, public parks and natural areas, including Wapsipinicon State Park and Pictured Rocks County Park, could be impacted if they become sites of violence or contamination, resulting in restricted access and costly environmental cleanup efforts.

Restoring historical, cultural, and natural sites following an attack could be costly and time-consuming, requiring specialized preservation, environmental remediation, and security enhancements. Additionally, public fear and safety concerns could lead to reduced visitation and use of community spaces, further affecting the cultural and economic landscape of the planning area.

Future Land Use and Development

The impact on future land use and development could be significant, particularly in areas directly affected by the event. In the short term, any damaged or contaminated areas, such as public spaces, commercial districts, or agricultural lands, might see a slowdown in development as resources are diverted toward recovery efforts and security enhancements. Public or private investment in these areas could decline temporarily as developers, businesses, or homeowners may hesitate to invest in locations perceived as unsafe or vulnerable.

In cases of bioterrorism or agroterrorism, agricultural lands could become unusable if contamination affects soil or water quality, potentially leading to restrictions on future agricultural development in those areas. These incidents could also trigger stricter zoning and land-use regulations aimed at protecting critical infrastructure, agricultural systems, and public spaces from future threats. Enhanced security requirements could influence how public buildings and commercial areas are developed, with an increased focus on safety features such as surveillance, restricted access, and fortifications.

Additionally, if a major event creates lasting psychological or social impacts, certain areas—particularly those that are central to the attack—may experience reduced demand for housing or commercial development, which could stagnate growth in those regions. This could result in shifts in development priorities, as resources may be reallocated toward enhancing security infrastructure, emergency services, or rebuilding affected areas.

3.4.18.8 Consequence Summary

If an incident of terrorism, mass violence, bioterrorism, or agroterrorism were to occur in the planning area, the consequences would be widespread and severe. The immediate

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impact would include potential loss of life, injuries, and psychological trauma, deeply affecting the community's sense of safety. Critical infrastructure, such as healthcare facilities, transportation networks, and agricultural systems, could face disruptions, particularly if the incident targets essential services or leads to contamination. The local economy might suffer from business closures, reduced agricultural productivity, and a decline in property values in affected areas. Public confidence in safety and government response could be shaken, and long-term recovery efforts would be necessary to rebuild physical damage, restore public trust, and address any lingering environmental or health impacts. The event could also result in increased security measures and changes in land use and development to prevent future incidents.

Category	Narrative
Impact on the Public	• Potential loss of life, injuries, and long-term psychological trauma. • Fear and anxiety affecting daily activities and use of public spaces.
Impact on the Economic Condition of the Planning Area	• Business closures, reduced agricultural productivity, and financial losses. • Decline in investment and commercial activity in affected areas.
Impact on the Historical, Cultural, and Natural Environment	• Damage to historical landmarks, cultural sites, and public spaces. • Potential contamination of natural environments, affecting wildlife and agriculture.
Impact on Built Environment, General Property, and Critical Infrastructure	• Temporary decline in property values, particularly in affected areas. • Disruptions to transportation, healthcare, and energy infrastructure.
Impact on the Public Confidence in Government	• Erosion of trust in government and emergency response, particularly if the response is perceived as slow or ineffective. • Increased demand for enhanced security and safety measures.
Impact on Responders	• Overwhelmed emergency services and healthcare facilities, with resource shortages. • Increased risk for first responders in handling dangerous situations or contaminated sites.
Impact on continuity of operations, including continued delivery of government services	• Potential delays in providing essential services due to infrastructure or resource disruptions. • Increased costs for security and emergency response planning.

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Category	Narrative
Cascading hazards	• Food shortages, economic downturns, and environmental damage. • Increased demand for public health services and potential long-term contamination effects.

3.4.19 Tornadoes

Probability	Population Impact	Property Impact	Economy Impact	Overall Hazard Ranking
2.44	2.69	2.75	2.38	19.08

3.4.19.1 Description

A tornado is a rapidly rotating column of air extending from a thunderstorm to the ground, often visible as a funnel cloud. Tornadoes can cause extreme damage with winds that can exceed 200 miles per hour, uprooting trees, destroying buildings, and hurling debris with lethal force. They vary in size, intensity, and duration, with some lasting only a few minutes while others can travel significant distances, causing widespread destruction. Tornadoes typically form during severe thunderstorms, particularly in regions prone to strong weather systems, like the Midwest, where warm and cold air masses frequently collide.

It is important to understand tornadoes because they pose a significant threat to life, property, and infrastructure. Their unpredictable nature and high wind speeds make them especially dangerous, often causing damage within minutes of formation. Communities must prepare for tornadoes by having emergency plans, warning systems, and safe shelters in place. For regions like the planning area, which lies in the U.S. "Tornado Alley", preparedness and rapid response are essential to minimizing the risks posed by this powerful natural hazard.

3.4.19.2 Location

All areas in the planning area are susceptible to tornadoes due to the county's location in the Midwest, where tornado activity is relatively common. However, certain regions may face higher risks based on population density, infrastructure, and geography. Towns like Anamosa and Monticello are particularly vulnerable because of the higher concentration of homes, businesses, schools, and public infrastructure. A tornado in these areas could cause significant property damage and potentially result in a higher number of casualties due to the density of the population. Meanwhile, rural areas and farmlands, although less populated, are also at risk. Farm buildings, equipment, crops, and livestock could be

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destroyed, leading to economic losses for the agricultural sector, which is crucial to the local economy. Additionally, critical infrastructure and public buildings, such as schools, hospitals, government offices, and emergency services, could face severe impacts if struck by a tornado, complicating emergency response efforts and recovery operations. Given that tornadoes can occur anywhere in the planning area, preparedness across the county is essential to mitigate the risks to life and property.

Applicable Jurisdictions	
Unincorporated Jones County	City of Oxford Junction
City of Anamosa	City of Wyoming
City of Martelle	Anamosa CSD
City of Monticello	Midland CSD
City of Morley	Monticello CSD
City of Olin	Olin CSD
City of Onslow	Sacred Heart School
	St. Patrick School
Applicable	Not Applicable

3.4.19.3 Magnitude/Severity

The magnitude and severity of tornadoes are measured using the Enhanced Fujita (EF) Scale, which categorizes tornadoes based on the damage they cause to buildings, infrastructure, and vegetation. The scale ranges from EF0 to EF5, with higher numbers indicating more destructive tornadoes. An EF0 tornado, for example, has winds of 65 to 85 mph and causes light damage, such as broken tree branches or minor damage to roofs. At the highest level, an EF5 tornado has winds exceeding 200 mph and can cause catastrophic damage, including the complete destruction of well-built structures and the uprooting of trees.

The path length and width of the tornado also contribute to its severity. A wider tornado or one that stays on the ground for an extended period will generally cause more widespread damage. In addition to the physical damage, the number of casualties, injuries, and economic losses from a tornado also play a role in determining the overall severity of the event. Tornado warnings issued by the National Weather Service (NWS) are based on radar detections, observations, and storm conditions, helping communities gauge the potential severity and respond accordingly. By measuring both wind speeds and the extent of damage, the EF scale provides a standardized way to assess and compare the severity of tornadoes.

	SCALE	WIND SPEED	DESCRIPTION
	EF-0	65-85 MPH	'Minor' damage: shingles blown off or parts of a roof peeled off, damage to gutters/siding, branches broken off trees, shallow rooted trees toppled.
	EF-1	86-110 MPH	'Moderate' damage: more significant roof damage, windows broken, exterior doors damaged or lost, mobile homes overturned or badly damaged.
	EF-2	111-135 MPH	'Considerable' damage: roofs torn off well constructed homes, homes shifted off their foundation, mobile homes completely destroyed, large trees snapped or uprooted, cars can be tossed.
	EF-3	136-165 MPH	'Severe' damage: entire stories of well constructed homes destroyed, significant damage done to large buildings, homes with weak foundations can be blown away, trees begin to lose their bark.
	EF-4	166-200 MPH	'Extreme' damage: Well constructed homes are leveled, cars are thrown significant distances, to story exterior wall of masonry buildings would likely collapse.
	EF-5	> 200 MPH	'Massive/incredible' damage: well constructed homes are swept away, steel-reinforced concrete structures are critically damaged, high-rise buildings sustain severe structural damage, trees are usually completely debarked, stripped of branches and snapped.

3.4.19.4 Past Occurrences

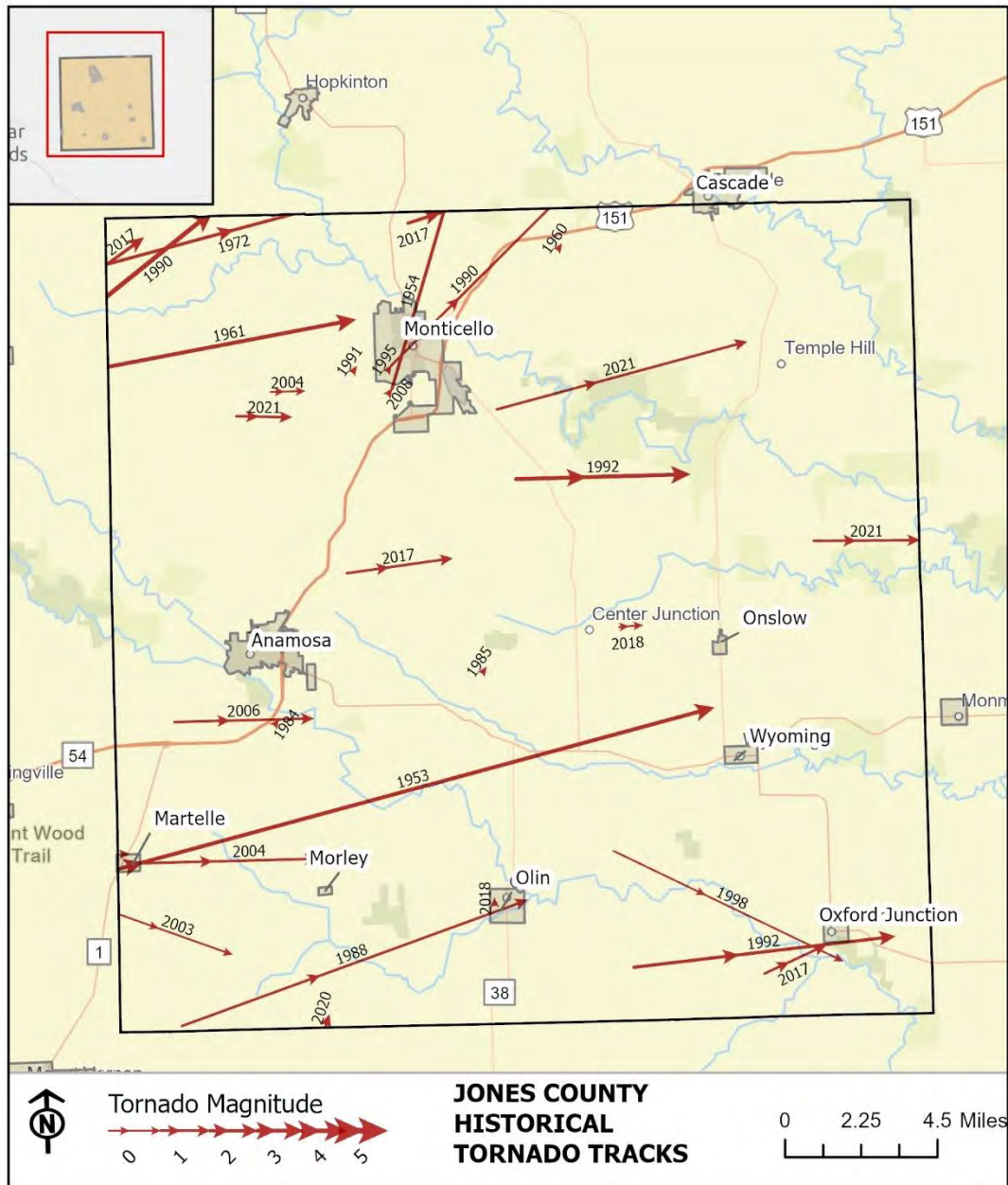
Examining past occurrences of tornadoes, both locally and regionally, helps the planning area better prepare for future incidents by identifying vulnerabilities, improving emergency response strategies, and enhancing community awareness. Although some of these tornado events may not be localized to Jones County, they provide valuable lessons on how to strengthen building codes, improve warning systems, and plan for the

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recovery of affected areas. Reviewing incidents such as the 2008 Parkersburg tornado or the 2018 Marshalltown tornado highlights the importance of preparedness, rapid response, and the need for community shelters. By studying these past events, the planning area can assess its own risks and ensure that resources are in place to mitigate the impact of future tornadoes.

Here are some significant examples of tornado incidents in Iowa and the Midwest:

- May 25, 2008 (Parkersburg, Iowa): An EF5 tornado struck the town of Parkersburg, causing widespread destruction. The tornado killed 9 people and injured 70 others, while leveling hundreds of homes and businesses. Winds were estimated at over 200 mph, and the damage totaled over \$100 million.
- June 7, 1984 (Jones County, Iowa): A tornado outbreak occurred across parts of Iowa, including Jones County. Several tornadoes touched down, resulting in structural damage to homes and farms, though there were no fatalities in the county. The storm system caused widespread destruction across Iowa.
- July 19, 2018 (Marshalltown, Iowa): An EF3 tornado hit Marshalltown, causing severe damage to the downtown area, including historic buildings and the local courthouse. Over 22 people were injured, but there were no fatalities. The estimated damage exceeded \$188 million.
- May 22, 2011 (Joplin, Missouri): One of the deadliest tornadoes in U.S. history, this EF5 tornado devastated the town of Joplin, Missouri. It killed 158 people and injured over 1,000. The tornado caused over \$2.8 billion in damage, leveling homes, schools, and hospitals.
- April 11, 2001 (Iowa City, Iowa): An EF2 tornado hit Iowa City, becoming the first tornado to strike the downtown area in recorded history. The tornado caused widespread damage to buildings, including the University of Iowa campus, but no fatalities occurred.



3.4.19.5 Likelihood of Future Occurrence

Based on local, regional, and state information, the likelihood of future tornado occurrences in the planning area is moderate to high, given the area's location in the Midwest, where tornadoes are relatively frequent. Iowa experiences an average of around 51 tornadoes per year, according to the Iowa Department of Natural Resources. The state is part of "Tornado Alley," a region that experiences a higher frequency of

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tornadoes due to the interaction of warm, moist air from the south and cooler air masses from the north.

Historically, the planning area has experienced several tornadoes, with significant events recorded in 1984 and other years. While tornadoes may not occur every year in the county, the surrounding region is prone to frequent tornado activity, and climate conditions make the likelihood of future occurrences probable. Local data from the National Weather Service also indicates that spring and summer months, particularly May and June, are peak tornado seasons in Iowa.

Given these factors, the planning area remains at risk for future tornado events, and preparedness is crucial for minimizing damage and ensuring public safety. The county's residents and emergency services must remain vigilant, especially during severe weather seasons, to respond effectively when tornado threats arise.

3.4.19.6 Climate Change Considerations

While tornadoes are primarily driven by atmospheric conditions, the relationship between climate change and tornado activity is still being studied. Current research has not definitively linked climate change to an increase in tornado frequency or intensity. Some studies suggest that changing weather patterns due to climate change, such as more frequent or intense storms, could influence conditions conducive to tornado formation, but this is not yet confirmed. Warmer temperatures may lead to increased atmospheric moisture, which can fuel severe thunderstorms, but it is unclear how this will affect tornado activity in places like the planning area.

Climate models do not yet predict a clear trend in tornado activity related to climate change, and current scientific understanding is that other factors, such as wind shear and temperature gradients, play a more direct role in tornado formation. Therefore, while climate change may have some indirect effects on the overall storm environment, it is not currently considered a primary driver of tornado risk in the region. Planning for tornado hazards should remain focused on local meteorological conditions and historical trends, rather than relying on climate change projections.

3.4.19.7 Vulnerability

People

The impact of tornadoes on the general population would be severe, with vulnerable and underserved populations facing heightened risks due to displacement, injuries, and

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barriers to recovery. Individuals without access to safe shelter, such as those living in mobile homes (5.14%) or substandard housing, may face greater risk of injury or death during a tornado. Older adults, individuals with disabilities (13.1%), and those with mobility limitations could struggle to seek shelter quickly, increasing their exposure to life-threatening conditions. Households without personal transportation (1.4%) may have difficulty reaching designated storm shelters, further isolating them from emergency response efforts.

Beyond immediate physical risks, tornadoes can cause significant psychological distress, particularly for low-income families (11.4%), renters, and those who lack financial resources to recover quickly. Children and individuals with pre-existing mental health conditions may experience heightened anxiety, fear, or post-traumatic stress, especially if they witness destruction, injury, or loss of loved ones. Displacement from damaged or destroyed homes could create long-term instability, particularly for low-income households and individuals reliant on rental assistance programs. Language barriers (0.4%) may also limit some residents' ability to receive timely emergency information and recovery assistance.

Additionally, access to essential services, such as healthcare, emergency response, and utilities, may be severely disrupted, leaving those in need of medical assistance at greater risk. The presence of dangerous debris after the storm increases the likelihood of injury during cleanup efforts, further straining emergency medical resources. Ensuring equitable access to storm shelters, mental health support, emergency medical care, and long-term housing assistance will be critical in reducing the disproportionate impact on underserved populations following a tornado event.

Economy

The impact on the local economy could be significant, particularly if it causes damage to homes, businesses, and agriculture. Businesses in affected areas may experience closures due to property damage or power outages, resulting in lost revenue and potentially leading to layoffs or financial strain for business owners. Agriculture, a key part of the planning area's economy, could suffer severe losses if crops, livestock, or farm infrastructure are damaged, disrupting the local food supply and impacting farmers' livelihoods.

The cost of rebuilding and repairing damaged infrastructure, including homes, roads, and public buildings, would place a financial burden on both individuals and local governments. Insurance claims would rise, potentially leading to increased premiums. Additionally, the county may need to allocate significant resources for emergency

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response and recovery efforts, diverting funds from other projects or services. The overall economic recovery could take months or even years, depending on the severity of the tornado and the availability of aid and resources.

Built Environment

General Property

The impact on property values would depend on the extent of the damage and the affected areas. In the short term, areas directly impacted by the tornado, especially those with significant damage to homes and businesses, might see a decline in property values due to the destruction and the potential reluctance of buyers to invest in areas with visible damage or perceived higher risk.

Properties that suffer major structural damage may lose significant value until they are repaired or rebuilt. Even once repairs are made, the perception of risk in areas affected by tornadoes can contribute to longer-term depreciation in property values. However, long-term impacts on property values would likely depend on the speed and effectiveness of the recovery efforts. If the community is able to rebuild quickly and restore infrastructure, property values may stabilize or recover over time.

On the other hand, areas within the planning area that were not directly affected by the tornado might experience little to no change in property values, especially if they are located in less vulnerable regions or farther from the storm's path. Overall, short-term dips in property values are likely in the hardest-hit areas, but a strong recovery effort could mitigate long-term effects.

Critical Infrastructure

The impact on critical infrastructure could be substantial, especially in areas directly hit by the storm. Power lines and electrical substations could be damaged, leading to widespread power outages that could last for hours or even days, depending on the severity of the damage and the speed of repair efforts. Communication systems, including cell towers and internet services, might also be disrupted, hindering emergency response coordination and making it difficult for residents to stay informed or contact loved ones.

Transportation infrastructure, such as roads and bridges, could be damaged by fallen trees, debris, or structural failure, disrupting the movement of people and emergency

vehicles. This could delay both immediate rescue efforts and the longer-term delivery of supplies necessary for recovery.

Water and sewage systems could also be impacted if treatment plants or pipelines are damaged, potentially causing contamination of drinking water or disruption of water services. This would not only affect residents but could also hinder operations at hospitals and other critical facilities.

Hospitals, emergency services, and schools could be directly affected if they suffer structural damage, limiting their ability to function during and after the event. This could put a strain on emergency response capabilities, as hospitals might become overwhelmed with injured residents, while emergency services struggle with damaged equipment or facilities. In summary, a tornado could severely disrupt key infrastructure, delaying recovery efforts and impacting the daily lives of the planning area's residents.

Historical, Cultural, and Natural Environment

A tornado in the planning area could cause significant damage to historical buildings and landmarks, including the Anamosa State Penitentiary, Grant Wood Art Gallery in Stone City, and the Jones County Courthouse. The destruction or severe damage to these structures would mean the loss of important connections to the county's past and cultural identity, requiring extensive restoration or reconstruction efforts. Older buildings, particularly those with weaker structural reinforcements, are especially vulnerable to high winds and flying debris, increasing the risk of irreparable damage to historically significant sites.

Cultural institutions such as the Monticello Heritage and Cultural Center, Wyoming Historical Museum, libraries, and places of worship could also be heavily impacted, leading to disruptions in community activities, religious services, and local traditions. These spaces often serve as gathering points for social and cultural events, and their loss would reduce community cohesion while also delaying historical preservation efforts. Additionally, destruction of archives, artifacts, or historical documents due to structural failures or water damage from post-storm rain could result in the permanent loss of historical records.

The natural environment would also suffer, as tornadoes could uproot trees and devastate vegetation in areas such as Wapsipinicon State Park, Pictured Rocks County Park, and Indian Bluffs State Preserve. The loss of biodiversity and habitat destruction could displace wildlife and increase the risk of soil erosion. Additionally, storm debris could contaminate waterways such as the Wapsipinicon River and Whitewater Creek,

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affecting aquatic life and water quality. Recreational areas may become unusable due to fallen trees, structural damage, or hazardous debris, reducing access to outdoor activities for residents and visitors.

Future Land Use and Development

The impact on future land use and development could be notable, particularly in areas that experience significant damage. In the short term, redevelopment efforts may focus on rebuilding damaged areas, potentially leading to shifts in how land is used. For instance, properties that were previously used for residential or commercial purposes may be rebuilt with enhanced structural standards to improve resilience against future storms, or they may be repurposed entirely.

In rural areas, agricultural lands that are affected may see a temporary halt in development as farmers and landowners assess the damage to crops and infrastructure, such as barns or silos. Farmland could be reallocated to other uses if significant losses occur, though this would depend on the extent of the damage.

Tornadoes could also lead to changes in zoning and building codes, particularly to encourage stronger construction practices in areas most vulnerable to tornadoes. New developments may be required to include storm shelters or adhere to higher building standards to mitigate future risks. Areas hit hardest by the tornado may also face reduced interest in new developments for a time, as residents and businesses may hesitate to invest in regions perceived as high-risk.

Moreover, land use planning might incorporate more green spaces or buffer zones in tornado-prone areas, which could alter the density of future development. These adjustments could reflect a desire to reduce vulnerability to future storms by prioritizing open space over dense building clusters. In summary, a tornado event could result in both short-term recovery efforts and longer-term changes to how land is developed and utilized in the planning area.

3.4.19.8 Consequence Summary

If a tornado were to occur in the planning area, the consequences could be widespread and severe. The immediate impacts would likely include damage to homes, businesses, and critical infrastructure, resulting in displaced residents and disrupted services. Historical and cultural landmarks could be lost, and the natural environment, including parks and wildlife habitats, would likely suffer significant damage. The local economy could face setbacks, particularly in the agricultural sector, with crops, livestock, and

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farmland at risk. Recovery efforts could require extensive resources and time, with potential changes to future land use and development as the community rebuilds and implements stronger building codes and preparedness measures.

Category	Narrative
Impact on the Public	• Injuries, fatalities, and displaced residents. • Psychological trauma and disruption of daily life.
Impact on the Economic Condition of the Planning Area	• Losses in agriculture, including crops and livestock. • Business closures and revenue loss during recovery.
Impact on the Historical, Cultural, and Natural Environment	• Damage or destruction of historical landmarks and cultural institutions. • Severe damage to parks, forests, and wildlife habitats.
Impact on Built Environment, General Property, and Critical Infrastructure	• Decrease in property values in heavily damaged areas. • Damage to critical infrastructure, including power lines, roads, and communication systems.
Impact on the Public Confidence in Government	• Erosion of trust if response and recovery efforts are delayed or ineffective. • Increased pressure on local authorities for disaster preparedness and mitigation.
Impact on Responders	• Strain on emergency services due to overwhelmed resources and personnel. • Challenges in reaching affected areas due to debris or damaged infrastructure.
Impact on continuity of operations, including continued delivery of government services	• Disruptions in government services due to damaged buildings and infrastructure. • Delays in recovery and service restoration efforts.
Cascading hazards	• Secondary hazards like fires, water contamination, and hazardous debris. • Longer-term environmental degradation due to damaged ecosystems and erosion.

3.4.20 Wildfire

Probability	Population Impact	Property Impact	Economy Impact	Overall Hazard Ranking
1.38	1.19	1.25	1.25	5.09

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3.4.20.1 Description

A wildfire is an uncontrolled fire that rapidly spreads through vegetation such as forests, grasslands, or agricultural fields. These fires are often fueled by dry conditions, strong winds, and highly flammable vegetation, making them difficult to control. Wildfires can start from natural causes, such as lightning strikes, or from human activities, such as unattended campfires, burning debris, or discarded cigarettes.

Wildfires are an important hazard because of their potential to cause widespread destruction in a short period of time. They can lead to loss of life, destroy homes and businesses, and damage critical infrastructure. In addition to immediate physical damage, wildfires also pose significant environmental risks, including soil erosion, water contamination, and long-term impacts on wildlife habitats. The smoke from wildfires can also affect air quality, causing health problems for residents even far from the fire's location. Understanding wildfire risks and being prepared for them is essential to protect people, property, and natural resources.

3.4.20.2 Location

In the planning area, certain areas are more susceptible to wildfires due to the presence of vegetation, open grasslands, and rural landscapes. The county's rural and agricultural areas, including farmlands and open fields, are particularly vulnerable, especially during periods of drought when dry crops, grasses, and other vegetation can easily ignite and spread fire quickly. Natural areas, such as forests, wooded parks, and nature preserves, are also at higher risk, as dense vegetation can serve as fuel, particularly during dry seasons.

Areas where rural lands meet developed zones, often referred to as the wildland-urban interface, are especially vulnerable, as properties located in these transition zones could face significant risk if a wildfire spreads from nearby forests or fields into residential or commercial areas. Additionally, campgrounds or areas with recreational activities like hiking may be more susceptible due to human activity, which can sometimes lead to accidental fire starts from campfires, fireworks, or discarded cigarette butts. Although the overall wildfire risk in the planning area is lower than in other regions, such as the western U.S., the county's rural landscapes and agricultural zones remain vulnerable during dry conditions.

Applicable Jurisdictions	
Unincorporated Jones County City of Anamosa	City of Oxford Junction City of Wyoming

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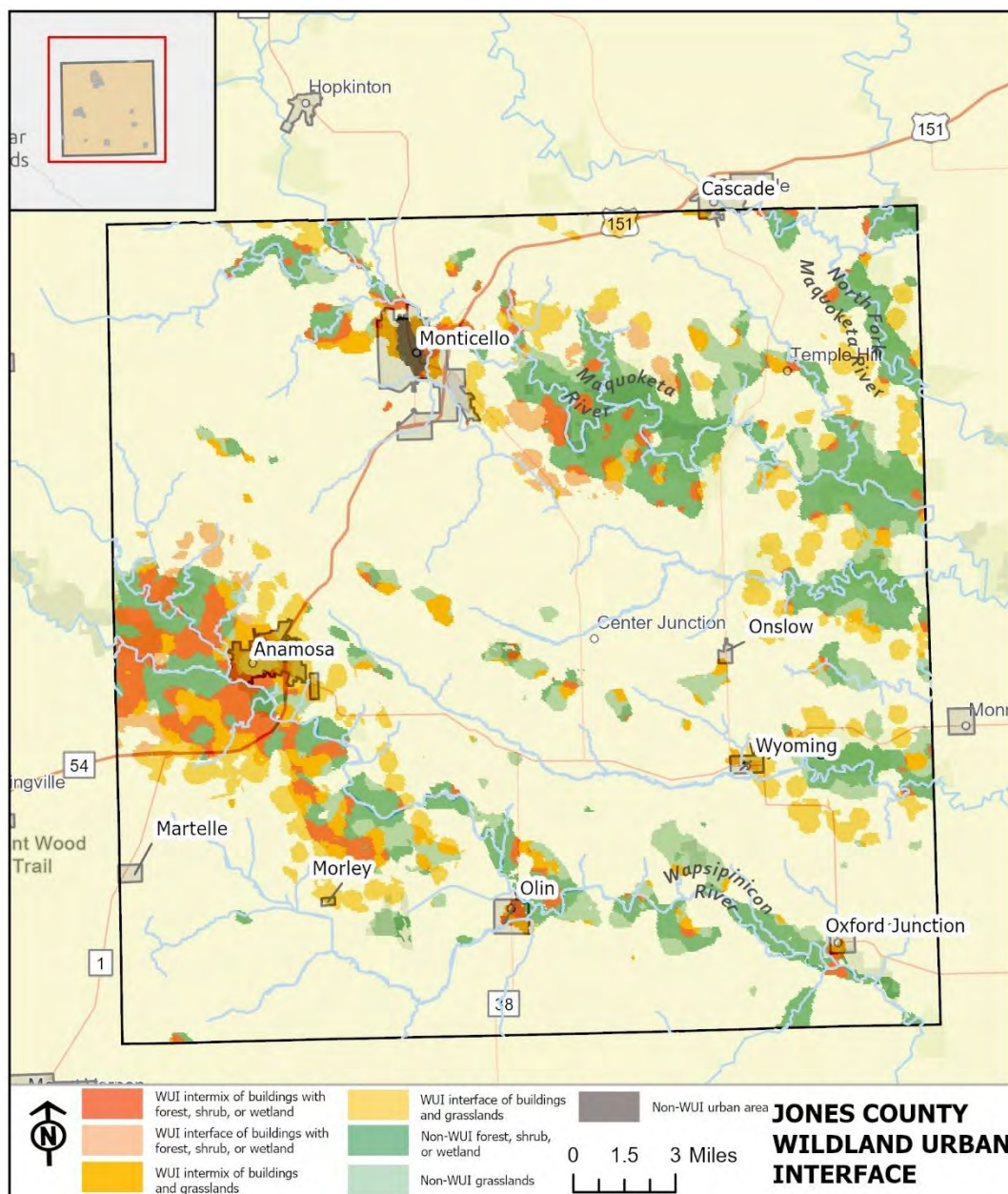


Applicable Jurisdictions

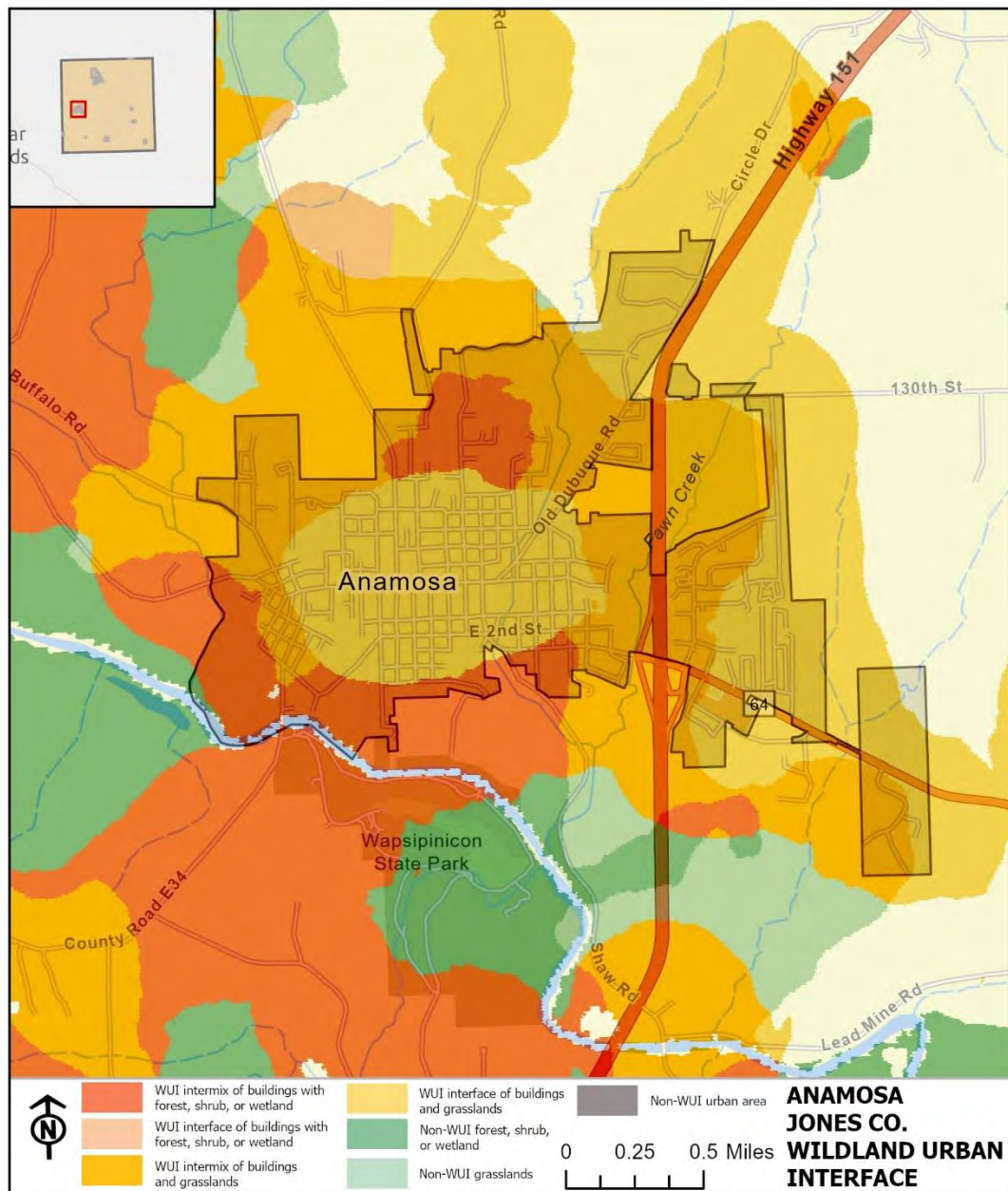
City of Martelle	Anamosa CSD
City of Monticello	Midland CSD
City of Morley	Monticello CSD
City of Olin	Olin CSD
City of Onslow	Sacred Heart School
	St. Patrick School

Applicable **Not Applicable**

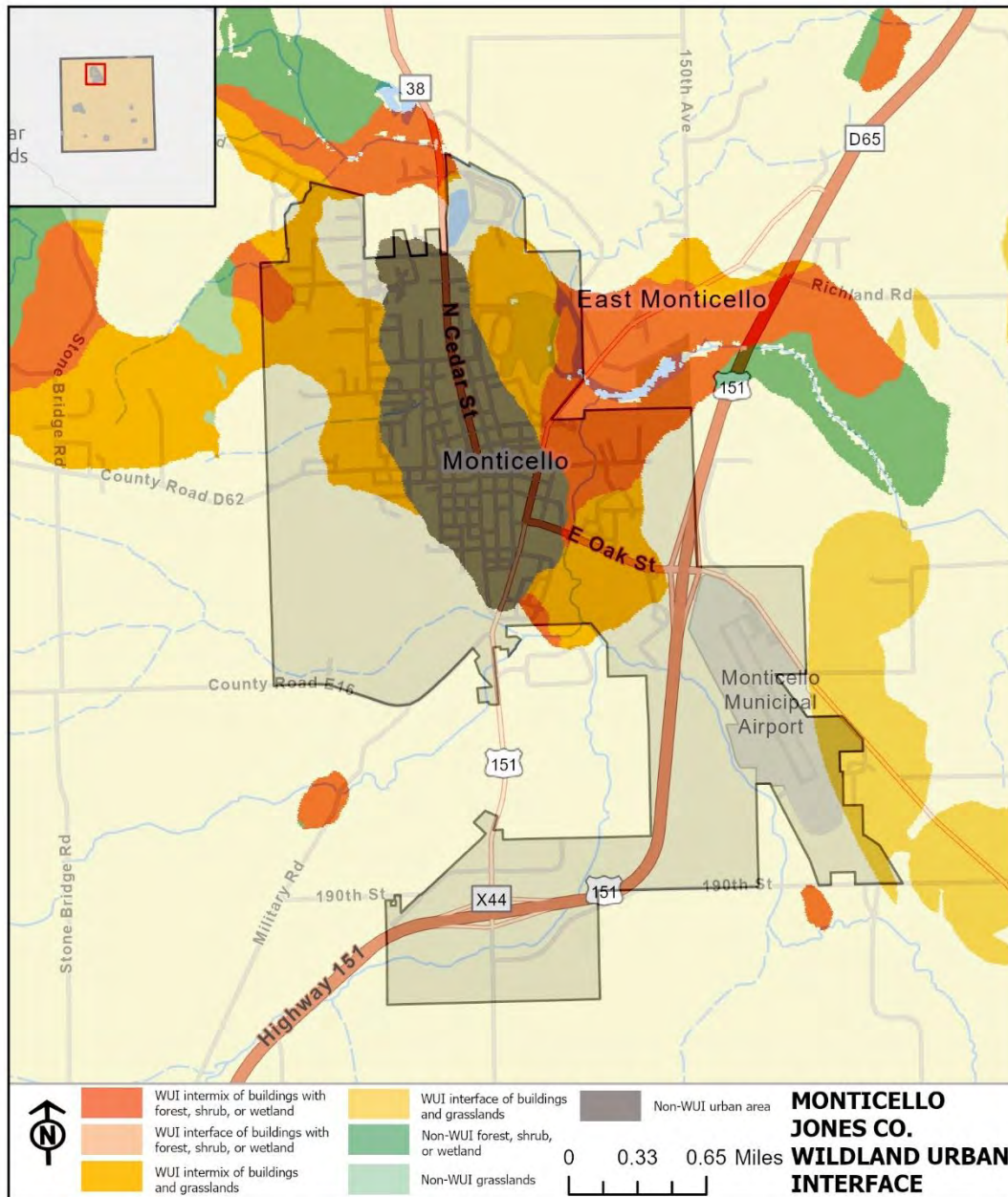
The following maps show the location of wildfire risk throughout the planning area:



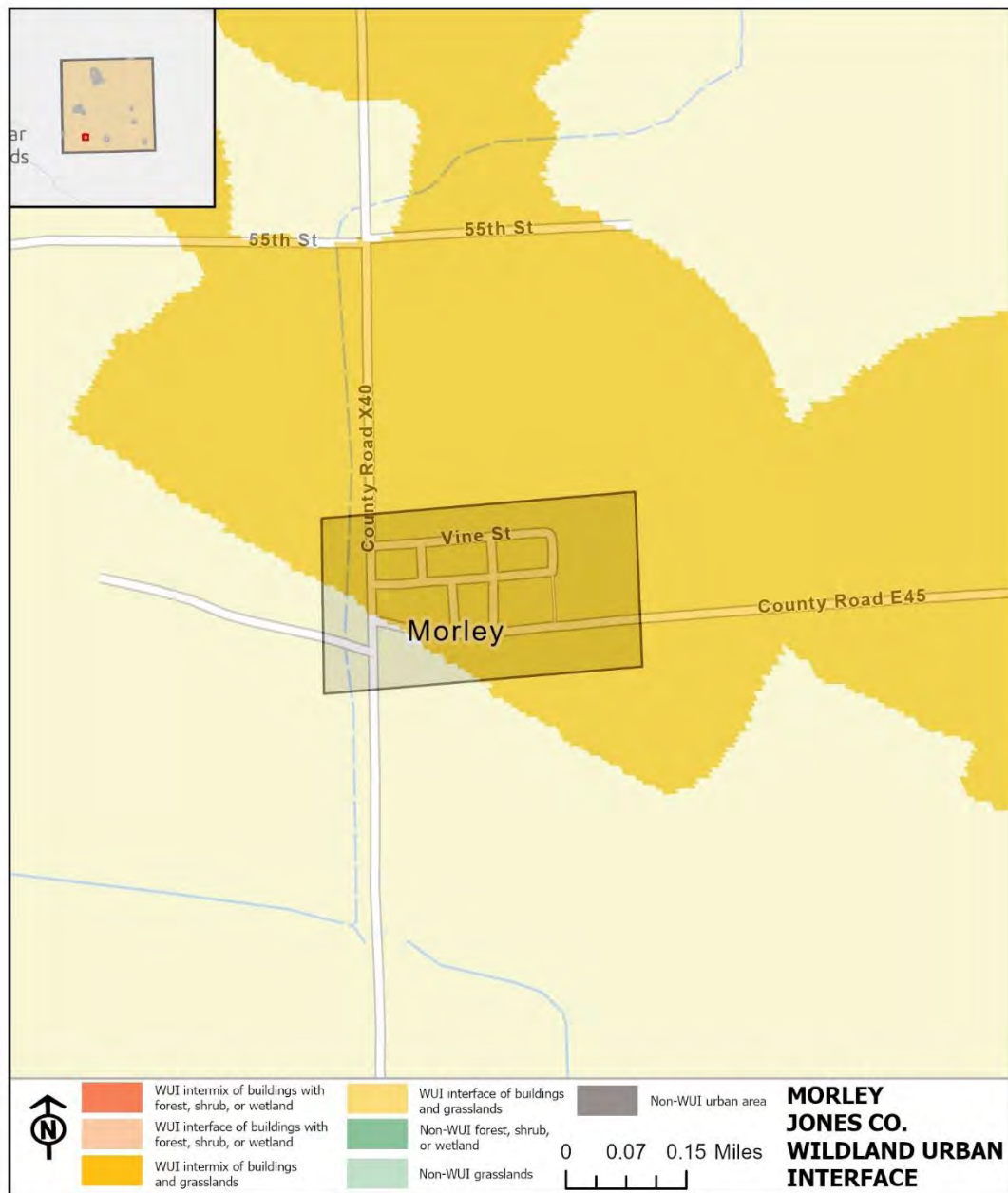
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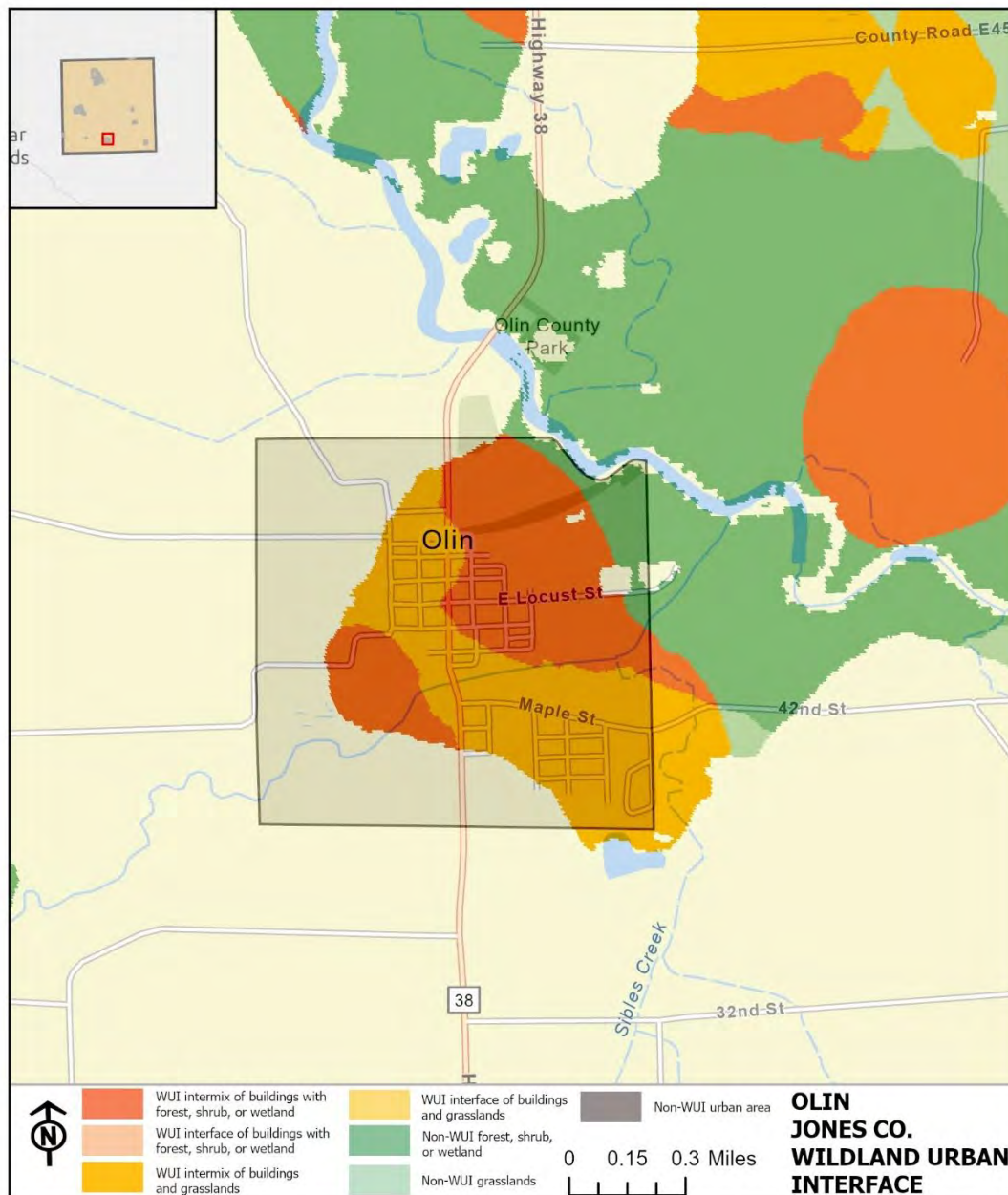
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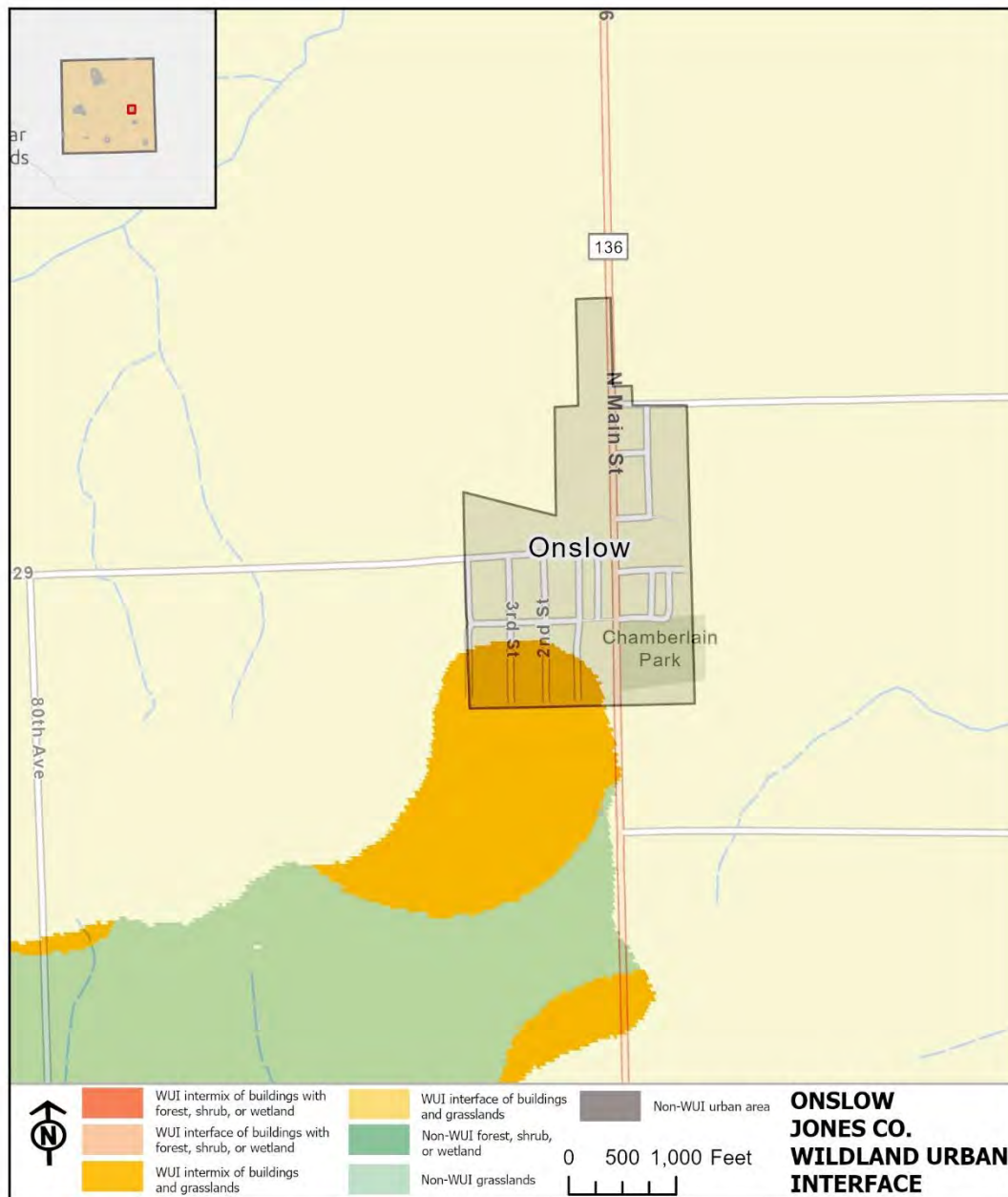
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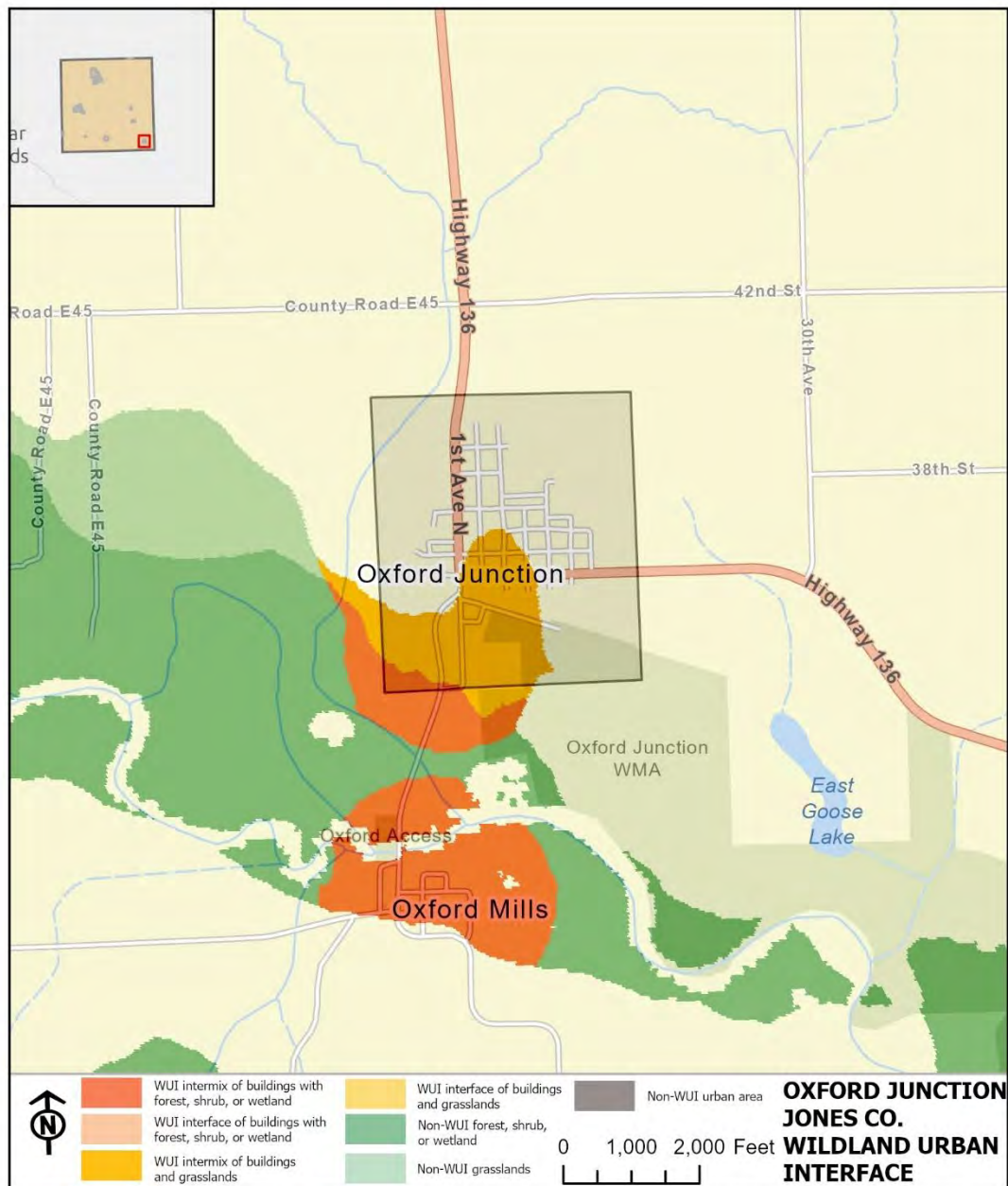
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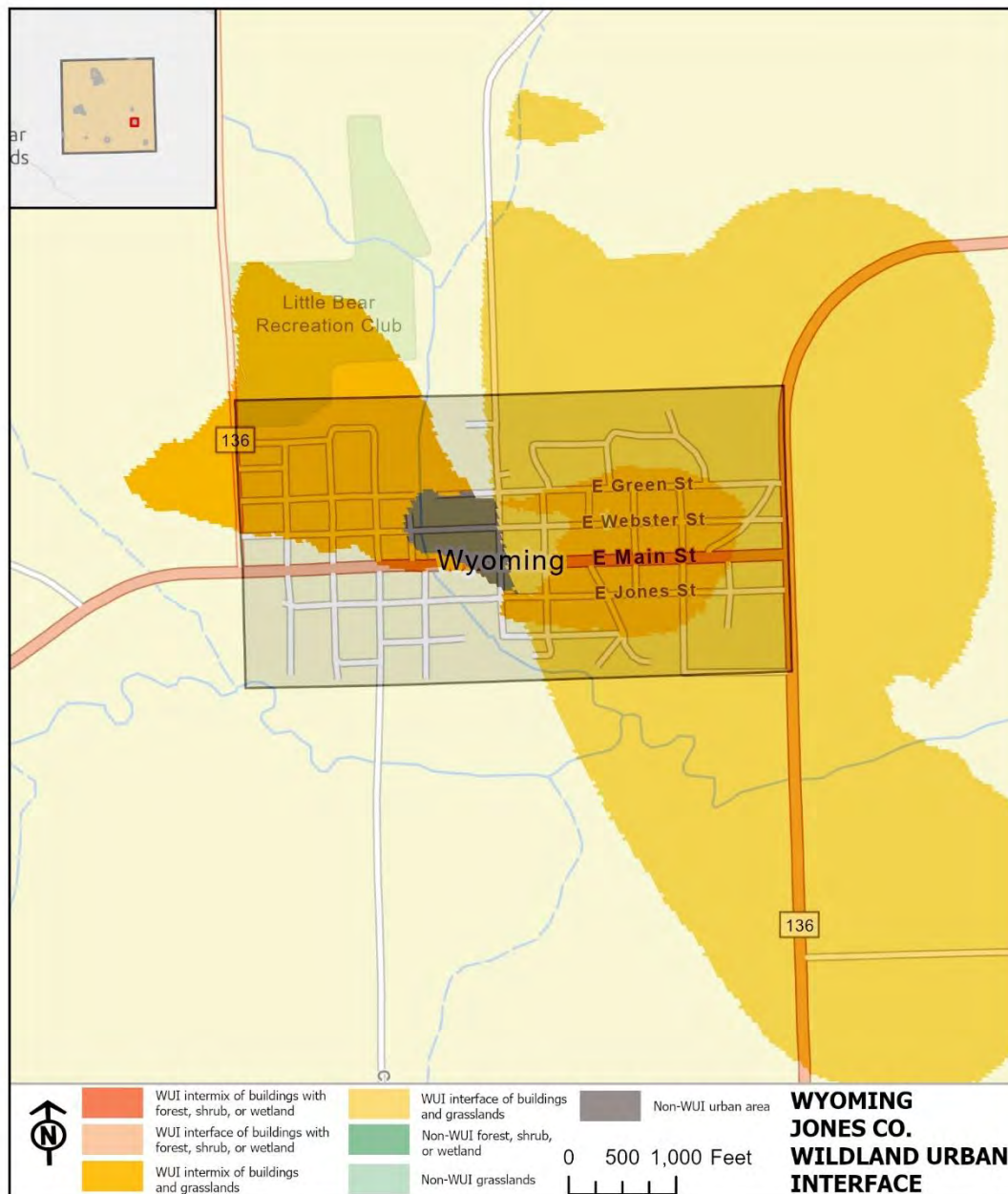
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3.4.20.3 Magnitude/Severity

The magnitude and severity of a wildfire are typically measured based on several key factors, including size, intensity, rate of spread, and potential damage. One of the primary measurements is the burned area, often quantified in acres, which indicates the total land affected by the fire. The intensity of the fire, determined by the energy released from burning vegetation, is another crucial factor and is assessed using flame length and

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heat output. Fires can be classified as low, moderate, or high intensity based on the severity of the flames and their potential for damage.

Rate of spread refers to how quickly the fire moves across the landscape, typically influenced by factors like wind speed, terrain, and fuel availability (vegetation). Wildfires that spread rapidly are generally more dangerous and difficult to control. The Fire Danger Rating System (FDRS) is often used to assess the likelihood of a fire starting and its potential severity, incorporating weather conditions, fuel moisture levels, and current fire behavior.

Additionally, the National Fire Danger Rating System (NFDRS) provides a more comprehensive measure by considering the environmental factors that contribute to fire behavior, such as temperature, humidity, and wind. Lastly, the potential for damage to human life, property, and critical infrastructure is also considered when evaluating the severity of a wildfire, as fires near populated or highly valued areas present a greater threat. Together, these factors help firefighters, emergency managers, and local authorities assess and respond to wildfires effectively.

The National Fire Danger Rating System (NFDRS) classifies fire danger levels into five categories, which help communicate the potential risk of wildfires based on current environmental conditions. These levels are determined by factors such as weather, vegetation dryness, fuel types, and wind. The five categories are listed in the following chart:



BURN SEVERITY	RANK	DESCRIPTION	CHARACTERISTICS
 Unburned	RANK 0	Fire extinguished before reaching microsite	• Leaf litter from previous years intact and uncharted • No evidence of char around base of trees and shrubs • Pre-burn seedlings and herbaceous vegetation present
 Low Severity Burn	RANK 1	Surface fire which consumes litter yet has little effect on trees and understory vegetation	• Burned with partially consumed litter present • Evidence of low flame heights around base of trees and shrubs (<0.5 m) • No significant decreases in overstory & understory basal area, diversity or species richness from pre-burn assessments • Usually burning below 80 degrees Celcius
 Medium-Low Severity Burn	RANK 2	No significant differences in overstory density and basal area, & no significant differences in species richness. However, understory density, basal area, and species richness declined.	• No litter present and 100% of the area covered by duff • Flame lengths < 2 m • Understory mortality present, little or no overstory mortality
 Medium-High Severity Burn	RANK 3	Flames that were slightly taller than those of Medium-low intensity fires, but these fires had occasional hot spots that killed large trees, with a significant reduction in the understory.	• Soil exposure on 1-50% of the area • Flame lengths < 6 m • High understory mortality with some overstory trees impacted
 High Severity Burn	RANK 4	Crown fires, usually a stand-replacing burn with relatively high overstory mortality.	• Soil exposure > 50% • Flame lengths > 6m • Higher overstory mortality 20% • Usually burning above 800 degrees Celcius

3.4.20.4 Past Occurrences

Reviewing past occurrences of wildfires, both locally and regionally, allows the planning area to better prepare for future incidents by identifying vulnerabilities and improving response strategies. While some of the events may not be localized to the planning area, they provide valuable lessons on how dry conditions, high winds, and human activity can contribute to wildfire risk. For example, fires in areas like the Loess Hills or along the

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Nebraska-Iowa border demonstrate how quickly wildfires can spread in rural or agricultural regions. By examining these events, the planning area can refine its wildfire prevention efforts, improve coordination among firefighting agencies, and ensure that vulnerable areas, such as farmlands and wildland-urban interfaces, are adequately protected and prepared. These insights contribute to a more resilient community and better preparedness for future wildfire threats.

Here are examples of significant wildfire incidents in Iowa and the Midwest:

- April 9, 2021 (Loess Hills, Iowa): A wildfire spread through the Loess Hills region in western Iowa, fueled by dry conditions and strong winds. The fire burned over 500 acres of land, forcing evacuations and threatening homes. Firefighters from multiple counties responded, and it took several days to contain the fire due to the challenging terrain.
- October 13, 2011 (Palo Alto County, Iowa): A large wildfire in northern Iowa spread across thousands of acres of agricultural land. The fire was driven by dry conditions and high winds, causing significant crop losses. Multiple fire departments worked together to contain the blaze, but no lives were lost, and damage was limited primarily to farmland.
- April 18, 2023 (Nebraska-Iowa Border): A wildfire started on the Nebraska side of the Missouri River and spread into western Iowa, burning around 300 acres. Strong winds and dry vegetation contributed to the fire's rapid spread. Firefighters from both states worked to contain the blaze, and no injuries were reported, but the fire threatened several homes and wildlife areas.
- October 8-10, 1871 (Peshtigo Fire, Wisconsin): The Peshtigo Fire is one of the deadliest wildfires in U.S. history, occurring in northeastern Wisconsin and parts of Michigan. It burned approximately 1.2 million acres and resulted in over 1,500 deaths. While not in Iowa, this event highlights the potential for severe wildfire impacts in the Midwest, especially under dry and windy conditions.
- October 24, 2012 (Southeast Minnesota): A wildfire driven by drought conditions and high winds burned through farmland and forest areas in southeast Minnesota, threatening homes and leading to evacuations. The fire scorched over 1,000 acres, but no injuries or fatalities were reported. The fire required extensive firefighting resources to bring it under control.

3.4.20.5 Likelihood of Future Occurrence

The likelihood of future wildfires in the planning area is considered moderate, based on local, regional, and state data. Iowa generally has fewer large-scale wildfires compared to western states, but dry conditions, agricultural activity, and human factors still pose risks.

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Periods of drought, which have become more frequent in the Midwest, increase the potential for wildfires, especially in rural and agricultural areas where dry crops and vegetation can easily ignite. Additionally, strong winds, common in the region, can cause fires to spread rapidly.

While the planning area is not heavily forested, it has a significant amount of grasslands, farmlands, and wooded areas, which are susceptible to fire during dry seasons. Human activity, such as outdoor burning, agricultural equipment malfunctions, and recreational activities like campfires, can also contribute to fire risks. Statewide, Iowa sees numerous small grass or crop fires each year, and neighboring states have experienced more significant wildfires. As climate variability continues to affect the region, the potential for more frequent dry spells could elevate the future risk of wildfires in the planning area. Therefore, while large wildfires are rare, localized grass and field fires remain a concern, particularly in dry, windy conditions.

3.4.20.6 Climate Change Considerations

Climate change may have an indirect influence on the risk of wildfires, including in places like the planning area. As climate patterns shift, warmer temperatures and prolonged periods of drought may become more common, increasing the likelihood of dry conditions that make vegetation, crops, and grasslands more susceptible to igniting and spreading fires. The Midwest, including Iowa, has already experienced more frequent extreme weather events, including longer dry spells followed by intense rainfall, which can create a cycle where vegetation grows quickly, then dries out, becoming fuel for wildfires.

While the planning area does not face the same wildfire risks as more arid regions, climate change could potentially increase the frequency of droughts and heat waves, which would elevate the risk of localized fires in agricultural and rural areas. Additionally, stronger winds associated with changing weather patterns could make it easier for small fires to spread rapidly. Although wildfires are still primarily driven by natural and human factors, climate variability may exacerbate the underlying conditions that contribute to wildfire hazards.

3.4.20.7 Vulnerability

People

The impact of wildfires on the general population could be severe, with vulnerable and underserved populations facing greater risks to safety, health, and long-term stability.

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Residents in rural and agricultural areas—particularly those in wildland-urban interface zones near grasslands or wooded areas—may face evacuations, displacement, and potential loss of property. Low-income households (11.4%) and renters may have fewer resources to relocate or recover from property loss, while households without personal transportation (1.4%) could struggle to evacuate quickly if wildfire conditions worsen. Older adults and individuals with disabilities (13.1%) may also experience challenges in evacuating, increasing their risk of being trapped in dangerous conditions.

Beyond direct fire dangers, smoke and poor air quality from a wildfire could pose serious health risks, particularly for older adults, children, and individuals with pre-existing respiratory conditions like asthma or COPD. Underserved populations lacking access to healthcare or air filtration systems may struggle to manage smoke exposure, increasing their risk of hospitalization or long-term health complications. Workers in outdoor or agricultural jobs may be disproportionately exposed to hazardous air quality, especially if protective equipment or alternative work accommodations are unavailable.

The psychological toll of wildfires—including stress, anxiety, and trauma—could affect both those directly impacted and the broader community, particularly if residents face displacement, loss of belongings, or uncertainty about recovery efforts. Limited English proficiency (0.4%) could create barriers in receiving evacuation warnings or accessing relief services, further isolating vulnerable residents. Ensuring equitable access to evacuation assistance, emergency shelters, medical care, and long-term recovery resources will be critical to minimizing the disproportionate burden on at-risk populations in wildfire-affected areas.

Economy

The impact on the local economy could be substantial, particularly in the agricultural sector. Farmlands, crops, and livestock would be at risk, potentially leading to significant economic losses for farmers and the local agricultural industry. The destruction of crops, pastureland, and equipment could affect both immediate and future income, especially if replanting or rebuilding efforts are needed.

Businesses in affected areas could face temporary closures due to evacuation orders or fire damage, leading to lost revenue and potential long-term financial strain. Local infrastructure, such as roads or utilities, may also suffer damage, disrupting transportation routes and supply chains, which could affect both local businesses and agricultural distribution.

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The costs of emergency response and firefighting efforts would further strain local government resources, as funds might need to be diverted from other projects or services to address the immediate needs of fire containment and recovery. Additionally, tourism and outdoor recreation could be impacted if parks, campgrounds, or natural attractions are damaged or temporarily closed, further contributing to economic losses in the region.

Built Environment

General Property

If a wildfire were to occur in the planning area, homes and buildings located in the wildfire zone could experience a decline in property values due to damage and the perceived increased risk of future fires. This is particularly true for properties in wildland-urban interface areas, where development meets grasslands or forests, as they may be considered higher risk by potential buyers.

Properties that sustain significant structural damage could see temporary reductions in value until repairs are completed. In some cases, higher insurance premiums in areas impacted by fire risk could deter buyers and reduce the marketability of properties.

In rural areas, agricultural land affected by the wildfire might also face temporary depreciation, especially if fire damage disrupts farming operations or reduces the productivity of the land. Even after recovery, properties in areas with a history of wildfire incidents may struggle to regain their former value.

Critical Infrastructure

The impact on critical infrastructure could be significant, particularly in rural and agricultural areas. Power lines and electrical substations could be damaged or destroyed, resulting in widespread power outages that could affect homes, businesses, and emergency services. Roads and transportation networks could be blocked or damaged by debris and fire, making it difficult for emergency responders to access affected areas and for residents to evacuate.

Water supply systems could also be at risk if fire damages pipelines or treatment facilities. Contamination of water sources due to debris or chemicals from the fire could affect drinking water quality. Telecommunications infrastructure, including cell towers, could be compromised, leading to disrupted communication, which is critical during emergencies for coordination between first responders and public communication.

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Hospitals and emergency response centers may face an overwhelming demand for medical services and shelter if large numbers of people are displaced or injured. Fire damage to roads, utilities, and communication lines could further delay emergency response efforts and hinder the ability to restore services to affected areas. Overall, the integrity of the planning area's critical infrastructure would be challenged, potentially causing delays in recovery and restoration efforts.

Historical, Cultural, and Natural Environment

The impact of a wildfire on the historical, cultural, and natural environment could be significant, particularly in rural areas, forests, and prairies of the planning area. Historical buildings and landmarks, such as the Edinburgh Pioneer Village and historic farmsteads, could be at risk of fire damage or complete destruction, leading to the permanent loss of irreplaceable structures tied to the county's heritage and rural history. Since many older buildings are constructed from wood and other flammable materials, a wildfire could quickly spread and devastate these sites, requiring extensive preservation efforts or reconstruction.

Cultural institutions, such as the Anamosa State Penitentiary Museum, Monticello Heritage and Cultural Center, and Grant Wood Art Gallery in Stone City, could also be at risk if wildfires spread near urban edges or wooded areas close to developed communities. Damage to these sites would disrupt community gatherings and cultural activities, impacting local traditions and access to historical artifacts. Additionally, evacuations or road closures due to wildfire threats could temporarily limit public access to historic landmarks and museums, affecting tourism and community engagement.

The natural environment would likely suffer considerable damage, particularly in parks, forests, and wildlife habitats. A wildfire could burn thousands of acres, leading to the destruction of vegetation, loss of wildlife, and long-term ecosystem disruption in areas such as Wapsipinicon State Park, Pictured Rocks County Park, and Indian Bluffs State Preserve. The loss of tree cover and native plant species could increase soil erosion, reduce water retention, and alter water quality in local rivers and streams such as the Wapsipinicon River. Recreational areas that attract locals and visitors could become unsafe or unusable, limiting outdoor activities and harming local tourism. The ecological balance could take years to recover, and the visual landscape of the area may be permanently altered by widespread fire damage.

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Future Land Use and Development

The impact on future land use and development could be substantial, particularly in areas directly affected by the fire. In the short term, rebuilding efforts may focus on restoring damaged properties, leading to potential shifts in land use priorities. For instance, residential or commercial areas that were heavily impacted may see stricter building codes implemented to reduce fire risk, such as the requirement for fire-resistant materials or creating buffer zones between developments and fire-prone areas.

In rural and agricultural areas, where farmlands and vegetation may have been destroyed, landowners may choose to reallocate land for other purposes or implement changes in land management practices to mitigate future fire risks, such as controlled burns or creating firebreaks. This could alter how the land is used and influence the types of crops or livestock that are raised, particularly if soil quality or natural resources have been affected by the fire.

Additionally, local authorities may reconsider zoning regulations in areas that have been deemed vulnerable to wildfires, potentially limiting future development in high-risk areas. This could discourage new residential or commercial projects in wildland-urban interface zones where the risk of fire is greater. Over time, the experience of a wildfire could lead to more cautious planning for future developments, with a focus on creating safer, more resilient communities that are better equipped to withstand fire hazards.

3.4.20.8 Consequence Summary

If a wildfire were to occur in the planning area, the consequences could be widespread and damaging. The fire could result in the loss of homes, businesses, and agricultural assets, particularly in rural areas, forcing residents to evacuate and causing significant economic disruption. Critical infrastructure such as power lines, roads, and water systems could be damaged, delaying emergency response and recovery efforts. Historical and cultural landmarks could be lost, while the natural environment, including parks and wildlife habitats, would face destruction, leading to long-term ecological impacts. Future land use and development could be affected by stricter building codes and zoning changes, making the community more cautious about future growth in fire-prone areas.

Category	Narrative
Impact on the Public	• Evacuations and displacement of residents. • Health risks from smoke and air quality. • Psychological stress and trauma.



Category	Narrative
Impact on the Economic Condition of the Planning Area	• Losses in agriculture, including crops and livestock. • Business closures and financial strain. • Costs of emergency response and recovery.
Impact on the Historical, Cultural, and Natural Environment	• Damage to or destruction of historical landmarks. • Loss of cultural institutions and disruption of community activities. • Destruction of parks, wildlife habitats, and natural landscapes.
Impact on Built Environment, General Property, and Critical Infrastructure	• Decline in property values in affected areas. • Damage to power lines, water systems, and transportation networks. • Increased insurance premiums and costs of rebuilding.
Impact on the Public Confidence in Government	• Erosion of trust if response and recovery efforts are inadequate. • Increased demand for better fire prevention and preparedness.
Impact on Responders	• Strain on emergency personnel and firefighting resources. • Risk to responders' safety and health due to hazardous conditions.
Impact on continuity of operations, including continued delivery of government services	• Disruption of public services and administrative functions. • Delays in restoration of infrastructure and essential services.
Cascading hazards	• Soil erosion and water contamination. • Increased risk of flooding or landslides due to loss of vegetation. • Potential for long-term ecological damage.



SECTION 4:

MITIGATION STRATEGY





SECTION 4: MITIGATION STRATEGY

4.1 Overview

Element Addressed in Section

Element C3. Does the plan include goals to reduce/avoid long-term vulnerabilities to the identified hazards? (Requirement 44 CFR § 201.6(c)(3)(i)), including requirement **C3-a**.

The mitigation strategy is a key component of the local hazard mitigation planning process, focused on identifying actions that will reduce or eliminate long-term risks to people, property, and the environment from hazards. This section outlines the development of a comprehensive approach for mitigating the impacts of natural disasters by setting clear goals, prioritizing actions, and creating an action plan for implementation. The strategy is built on a thorough understanding of the community's risks, capabilities, and vulnerabilities, ensuring that all stakeholders are involved in decision-making and that actions are aligned with broader community goals. The section will cover the formulation of mitigation goals, identification and prioritization of specific actions, and methods for integrating these actions into existing plans and processes to promote long-term resilience and risk reduction.

4.1.1 Goals and Objectives

Element Addressed in Section

Element E2. Was the plan revised to reflect changes in priorities and progress in local mitigation efforts? (Requirement 44 CFR § 201.6(d)(3)), including requirement **E2-a**.

For this plan update, the revised goals have been aligned with the State of Iowa's Hazard Mitigation Plan to ensure consistency and comprehensive hazard reduction across both local and state levels. These goals reflect a proactive, collaborative approach to mitigate risks while enhancing resilience in the planning area:

- Goal 1: Protect critical facilities, infrastructure, and community assets by promoting comprehensive planning and regulatory processes that reduce hazard risks.
- Goal 2: Safeguard the health, safety, and property of residents through the development of resilient infrastructure and community-wide mitigation efforts.
- Goal 3: Enhance public awareness, communication, and education about hazards, risks, and vulnerability reduction to foster a more informed and prepared community.



- Goal 4: Ensure efficient use of public funds in implementing mitigation actions, focusing on long-term risk reduction and cost-effective strategies for hazard preparedness and response.

The updated goals for this Plan align with FEMA's mitigation action types as outlined in the Local Mitigation Planning Handbook (May 2023). Goals one and three directly correspond with two of the key action types: goal one focuses on developing and strengthening local plans and regulations to mitigate hazard impacts, while goal three emphasizes education and awareness programs to enhance public understanding of risks and increase community resilience.

Goal two incorporates both structural and infrastructure projects as well as the protection of natural systems, ensuring that mitigation strategies balance development with environmental sustainability.

Goal four, while not directly aligning with FEMA's standard action types, continues the county's focus on maintaining the continuity of essential services during disasters. This goal was refined to highlight the importance of warning systems and redundancy, with specific actions including the acquisition of generators and backup power systems to ensure critical services can continue functioning during emergencies.

4.2 Progress on Previous Mitigation Actions

Element Addressed in Section
Element E2. Was the plan revised to reflect changes in priorities and progress in local mitigation efforts? (Requirement 44 CFR § 201.6(d)(3)), including requirement E2-b .

The table below provides a comprehensive review of the 2020 hazard mitigation actions, detailing the status of each action for every jurisdiction. The table specifies whether each action has been completed or remains ongoing. For actions that have not been completed, the table indicates whether these actions are still relevant and will be incorporated into the updated action plan or if they are no longer applicable due to changes in priorities or conditions. This review ensures continuity and relevance in hazard mitigation efforts by transparently assessing past actions and determining their future applicability.



Action #	Project	Jurisdictions	Status
1*	Acquisition of Flood-Prone Structures	Jones County, Anamosa, Morley, Olin, Oxford Junction, Wyoming	Completed in Olin and Wyoming, where flood-prone properties were successfully removed, reducing future damages. All other jurisdictions did not complete this action, either due to lack of interested property owners or low applicability. Anamosa and Morley chose to exclude this action moving forward.
2*	Backup Generators	All Jurisdictions except for schools	Completed by Martelle and Wyoming, providing power continuity in emergencies. All other jurisdictions are actively seeking funding or grants to support this action, citing financial constraints as a primary barrier.
3*	Bury or Harden Power Lines	All Jurisdictions except for schools	Successfully completed in Cascade. All other jurisdictions have not completed this action due to cost, jurisdictional limitations, and infrastructure challenges. Oxford Junction noted the need for a cooperative agreement with its energy provider.
4*	Community Outreach	All Jurisdictions except for schools	Ongoing in all jurisdictions, which has conducted various meetings to enhance public awareness, though further outreach is limited by staffing needs.
5*	Critical Infrastructure Protection	All Jurisdictions except for schools	Completed in Wyoming and Martelle, focusing on protecting key infrastructure. For all other jurisdictions this action remains partially complete or pending additional funding and time resources.

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Action #	Project	Jurisdictions	Status
6*	Dam Warning Signage and/or Water Safety Signage	Jones County, Anamosa, Olin, Oxford Junction	Partially completed, with Jones County working to procure necessary signage, although some cities such as Olin, Oxford Junction, and Anamosa do not have control over river infrastructure or dams and may exclude this action moving forward.
7	Increased E911 Capabilities and Cell Phone Triangulation	All Jurisdictions except for schools	In progress for Jones County, which seeks to strengthen emergency communication systems but requires further resources to complete the action. Jones County coordinates this for all jurisdictions.
8*	Early Warning Systems	All Jurisdictions except for schools	Completed in Martelle, Wyoming, Olin, and Cascade with functioning sirens. All other jurisdictions continue to work toward completing their early warning systems, although budget constraints remain a factor.
9*	Elevation of Flood-Prone Structures	All Jurisdictions except for schools and Onslow	Completed by Anamosa, Wyoming, and St. Patrick's School to mitigate flood risks. All other jurisdictions have yet to elevate structures due to low interest among property owners and lack of recent flooding.
10	Emergency Operations Plans	All Jurisdictions except for schools	Completed in Jones County, with ongoing annual updates to maintain readiness. Jones County maintains these plans for all jurisdictions.

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Action #	Project	Jurisdictions	Status
11	Emergency Assistance Registration	All Jurisdictions except for schools	Incomplete in Jones County, which is still seeking funding and personnel to support this registration process. Jones County maintains this for all jurisdictions
12	Study/Evaluate and Maintain Existing Structural Flood Mitigation Projects	Anamosa, Monticello, Olin	Completed by Olin and Anamosa with maintenance strategies in place. Funding and personnel for all other jurisdictions to support this registration process is a challenge.
13*	Floodplain Management	All Jurisdictions except for schools, Morley, or Onslow	Fully implemented in Monticello, Cascade, Olin, Wyoming, and Anamosa, monitoring developments in floodplain areas to mitigate flood impacts. All other jurisdictions require ordinance updates to fulfill this action completely.
14*	Flood-Proofing Infrastructure	All Jurisdictions except for schools and Onslow	Completed in Monticello CSD and St. Patrick's School. Jones County, Cascade, Monticello, and Oxford Junction have ongoing flood-proofing projects pending funding and repairs.
15	Hazardous Materials Response	All Jurisdictions except for schools	Partially completed by Jones County, which contracts with a neighboring county for hazardous material response, though funding for full local capacity is still needed.
16	Mass Casualty Preparation	All Jurisdictions except for schools	Ongoing in Jones County with initial purchases made to support response capabilities, though limited by budget and staffing. All other jurisdictions require assessments for continued implementation due to staffing challenges.

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Action #	Project	Jurisdictions	Status
17*	Relocation of Flood-Prone Structures	Jones County, Anamosa, Monticello, Olin, Oxford Junction	Completed by Wyoming and St. Patrick's School. All other jurisdictions have not relocated structures, preferring acquisition or deeming the action non-essential.
18*	Maintaining Adequate Emergency Response Personnel	All Jurisdictions except for schools	Fully achieved in Martelle and Wyoming through regular training. All other jurisdictions need additional resources for training and staffing.
19*	Safe Rooms	All Jurisdictions	Safe rooms are established in Olin, Martelle, Cascade, and Wyoming. School districts like Anamosa CSD, Midland CSD, Monticello CSD, and Sacred Heart School have implemented safe rooms, enhancing shelter options during tornadoes. All other jurisdictions require assessments for continued implementation due to funding and staffing challenges.
20	Interoperability of Communications Systems	All Jurisdictions except for schools	Jones County invested in P25 digital communications but acknowledges further steps are needed for complete interoperability across agencies, citing funding as a significant barrier. Jones County coordinates this for all jurisdictions.
21*	Storm Drainage System Improvements	All Jurisdictions except for schools	Completed partially in Wyoming. All other jurisdictions still work on improvements, often hindered by funding and permitting requirements.

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Action #	Project	Jurisdictions	Status
22*	System Improvements (Sewer/Wastewater)	All Jurisdictions except for schools	Completed in Olin. Ongoing in Jones County, Morley, Monticello, Cascade, and Wyoming, where further updates are needed due to budget constraints. Anamosa and Cascade report limited issues with newer systems but seek further upgrades. All other jurisdictions require assessments for continued implementation due to funding and staffing challenges.
23*	System Improvements (Power)	All Jurisdictions except for schools	Completed in Cascade with no overhead lines. All other jurisdictions require funding or assistance for power infrastructure improvements.
24*	Stormwater Management Ordinances and Amendments	All Jurisdictions except for schools	Completed in Jones County with integrated county ordinances. Ongoing in Olin, Cascade, Monticello, and Wyoming with planned updates, mostly limited by resources. All other jurisdictions require assessments for continued implementation due to funding and staffing challenges.
25	Updated Floodplain Mapping and Studies	All Jurisdictions except for schools	Updated Floodplain Mapping and Studies was completed by Jones County. They updated their floodplain mapping, which addressed the intended goals. All other jurisdictions require assessments for continued implementation due to funding and staffing challenges.

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Action #	Project	Jurisdictions	Status
26	Updated or New Building Codes	Anamosa, Monticello, Olin, Onslow	Completed in Olin with monitoring for updates. All other jurisdictions require assessments for continued implementation due to funding and staffing challenges.
27*	Smoke Detectors and Fire Prevention Measures	All Jurisdictions except for schools	Ongoing across all jurisdictions, typically managed by fire departments but hindered by funding.
28	Sprinkler Systems	Anamosa, Martelle, Monticello, Olin, Oxford Junction, Wyoming	All other jurisdictions continue to face funding and staffing challenges to accomplish this project.
29	Property Maintenance/ Rehabilitation	All Jurisdictions except for schools	Partially completed in Olin, Morley, Monticello, Cascade, with some property improvements and ordinance updates. All other jurisdictions continue to face funding and staffing challenges to accomplish this project.
30	StormReady City/County Designations	All Jurisdictions except for schools	Achieved in Jones County with ongoing maintenance of StormReady designation. All other jurisdictions continue to face funding and staffing challenges to accomplish this project.
31*	Wetland Protection	All Jurisdictions except for schools, Morley, or Onslow	All jurisdictions require further funding, resources, and understanding of best practices to complete this action.
32	Road Signage	All Jurisdictions except for schools	Completed in Olin. All other jurisdictions plan to allocate resources to enhance signage. Implementation due to funding has been a challenge.

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Action #	Project	Jurisdictions	Status
33*	Basement Backflow Protection	All Jurisdictions except for schools, Jones County, or Morley	Olin mandates backflow prevention in property maintenance, but all other jurisdictions require further work and funding to complete this action.
34*	Increased Security at Tier II Facilities	All Jurisdictions except for schools	Some progress in Jones County, Monticello, and Cascade, mainly in identifying needs for facility security. All other jurisdictions require assessments for continued implementation due to funding and staffing challenges.
35*	Improved Fire Response Capabilities	All Jurisdictions except for schools	Completed in Olin with new equipment. All other jurisdictions still face funding and equipment limitations but are pursuing grants and plans for additional training and resource updates.

* One or more jurisdictions want this action to be included in the plan update

4.3 Identification and Analysis of Mitigation Actions

Element Addressed in Section
Element C4. Does the plan identify and analyze a comprehensive range of specific mitigation actions and projects for each jurisdiction being considered to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure? (Requirement 44 CFR § 201.6(c)(3)(ii)), including requirement C4-a. Element C5. Does the plan contain an action plan that describes how the actions identified will be prioritized (including a cost-benefit review), implemented, and administered by each jurisdiction? (Requirement 44 CFR § 201.6(c)(3)(iv)); (Requirement §201.6(c)(3)(iii)), including requirement C5-a.

The mitigation action plan outlined in this Section was completed with a thorough analysis of a comprehensive range of specific mitigation actions. These actions are tailored to address the vulnerabilities identified in the risk assessment and emphasize reducing risks to both existing and new buildings, infrastructure, and community assets.

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The strategy considers a variety of mitigation alternatives, including structural improvements, natural systems protection, local regulations, and public education programs. By analyzing these options, the planning area can select actions that best align with its capabilities while ensuring social, technical, and economic feasibility. This ensures the mitigation strategy targets both current vulnerabilities and long-term risk reduction for future developments.

The mitigation actions selected in **4.4 Mitigation Action Plan** were assessed using the STAPLEE system, a comprehensive evaluation framework. STAPLEE stands for Social, Technical, Administrative, Political, Legal, Economic, and Environmental criteria, ensuring that each action was evaluated for its overall feasibility and effectiveness. This system helps determine whether the actions are acceptable to the community, technically sound, administratively feasible, politically supported, legally enforceable, economically viable, and environmentally sustainable. These criteria guided the decision-making process to ensure the chosen mitigation actions meet community and operational standards.

Category	Concept of Analysis
Social	Mitigation actions are acceptable to the community if they do not adversely affect a particular segment of the population, do not cause relocation of lower-income people, and are compatible with the communities’ social and cultural values.
Technical	Mitigation actions are technically most effective if they provide long-term reduction of losses and have minimal secondary adverse impacts.
Administrative	Mitigation actions are easier to implement if the jurisdiction has the necessary staffing and funding.
Political	Mitigation actions can truly be successful if all stakeholders have been offered an opportunity to participate in the planning process and if there is public support for the action.
Legal	The jurisdiction or implementing agency must have legal authority to implement and enforce a mitigation action.
Economic	Budget constraints can significantly deter the implementation of mitigation actions. Hence, it is important to evaluate whether an action is cost-effective, as determined by a cost-benefit review, and whether it is possible to fund.
Environmental	Sustainable mitigation actions that do not harm the environment, that comply with Federal, State, and local environmental regulations, and that are consistent with the community’s environmental goals, have mitigation benefits while being environmentally sound.

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The cost-benefit review used in this plan consists of three categories: High, Medium, and Low. As much as possible, the costs and benefits of the project have been weighed to arrive at a final rank.

- **High Cost:** Existing funding levels are not adequate to cover the costs of the proposed project, and in some circumstances, funding may only be available after a presidential disaster declaration. These are items anticipated to cost in excess of \$100,000. This amount was selected as it corresponds to a change in procurement policy under 44 CFR.
- **Medium Cost:** The project could possibly be implemented with existing funding but would require a reappropriation of the budget or budget amendment, or possibly a bond option. These items have an anticipated cost between \$10,000 and \$100,000.
- **Low Cost:** The project could be funded immediately under the existing budget, generally at levels under \$10,000. Some low-cost options could be funded nearly entirely as volunteer or general office staff time projects.

The benefit analysis examines the short- and long-term impact the mitigation action would have on decreasing risk and increasing the ability to respond to incidents and disasters.

- **High Benefit:** The action will have an immediate impact on the reduction of risk and exposure to hazards and are generally well supported by the community. These are also actions that are within the respective organization's legal jurisdiction.
- **Medium Benefit:** The action will have a long-term impact on the reduction of risk and exposure to hazards or the action will have an immediate impact on the above. These actions may require more work to obtain full community support or may impact a smaller percentage of the community than High Benefit actions.
- **Low Benefit:** Benefits of the action may be difficult to quantify, or the project may not result in a significant improvement over existing conditions. The action may involve private/governmental property rights issues or other aspects that are generally outside of the jurisdiction's control, or improvement of coordination with agencies where existing levels of cooperation are acceptable.

Future mitigation actions were also analyzed in correlation with the National Flood Insurance Program (NFIP) Community Rating System (CRS):

- **Prevention:** Administrative or regulatory actions or processes that influence the way land and buildings are developed and built.

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- **Property protection:** Actions that involve the modification of existing buildings or structures to protect them from a hazard or remove them from the hazard area.
- **Structural:** Actions that involve the construction of structures to reduce the impact of a hazard.
- **Natural resource protection:** Actions that, in addition to minimizing hazard losses, also preserve or restore the functions of natural systems.
- **Emergency services:** Actions that protect people and property during and immediately after a disaster or hazard event.
- **Public information/education and awareness:** Actions to inform and educate individuals, elected officials, and property owners about the hazards and potential ways to mitigate them.

The planning stakeholders were provided with potential mitigation actions for each of the hazards identified in the risk assessment. Considering mitigation actions from the previous plan, the State of Iowa's plan, FEMA mitigation ideas, and other mitigation plans, mitigation actions were provided to the stakeholders for input and approval through the draft review process.

The following potential mitigation actions were considered for this plan's update:

Hazard	Potential Mitigation Actions Considered
Animal/Plan/Crop Disease	• Prevention: Implement biosecurity measures on farms and enforce zoning laws for disease control. • Public Information/Education: Educate farmers and the public about disease prevention and detection. • Emergency Services: Set up rapid response teams for containment.
Communicable Disease Outbreak	• Prevention: Strengthen health codes and improve sanitation regulations. • Property Protection: Establish quarantine zones to reduce spread. • Emergency Services: Develop mass vaccination protocols and stockpile medical supplies. • Emergency Services: Maintain adequate healthcare and emergency response personnel to manage disease outbreaks, including staffing for quarantine centers, hospitals, and emergency medical services. • Public Information/Education: Launch public awareness campaigns about hygiene and disease prevention.

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Hazard	Potential Mitigation Actions Considered
Critical Infrastructure Failure	• Prevention: Strengthen infrastructure codes to ensure resilience. • Property Protection: Retrofit critical infrastructure for improved durability. • Structural: Install backup power systems. • Structural: Bury or harden power lines as part of an effort to protect essential infrastructure and improve resilience against multiple hazards. • Structural: Improve the resilience of sewer and wastewater systems to prevent failures during infrastructure disruptions, ensuring continued service during emergencies. • Emergency Services: Implement emergency response plans for infrastructure failures. • Emergency Services: Strengthen E911 capabilities and implement cell phone triangulation to improve emergency response during infrastructure failures, ensuring more accurate location services and quicker dispatch of resources. • Emergency Services: Develop and update Emergency Operations Plans (EOPs) to ensure rapid response and continuity of operations during critical infrastructure failures, including power outages, water system failures, and transportation disruptions. • Emergency Services: Enhance the interoperability of communications systems to ensure seamless coordination between emergency responders during infrastructure failures, such as power outages or transportation disruptions. • Public Information/Education: Inform the public about infrastructure vulnerabilities and response plans.
Cyber Incident	• Prevention: Enforce cybersecurity regulations and data protection laws. • Emergency Services: Develop a rapid-response cyber team. • Public Information/Education: Provide training on cybersecurity best practices for the public.



Hazard	Potential Mitigation Actions Considered
Dam Failure	• Prevention: Implement land use controls around dams. • Property Protection: Elevate structures in flood-prone areas downstream from dams. • Structural: Retrofit dams to meet modern safety standards. • Structural: Regularly study and maintain dams and other related infrastructure to reduce the risk of failure and ensure continued protection for downstream communities. • Structural: Remove existing, but non-functional dams to restore the existing ecosystem and eliminate a dam failure scenario. • Natural Resource Protection: Restore wetlands downstream to absorb potential flooding. • Emergency Services: Develop evacuation plans and warning systems. • Public Information/Education: Educate the public about dam risks and evacuation routes. • Public Information/Education: Install dam warning signage to inform the public about potential risks and safe zones near dams, and promote awareness of flood risks in the event of dam failure.
Drought	• Prevention: Implement water usage regulations and drought contingency planning. • Property Protection: Promote water conservation measures in homes and businesses. • Natural Resource Protection: Preserve and restore watersheds to improve water supply. • Public Information/Education: Run campaigns on water conservation and drought resilience.
Earthquake	• Prevention: Enforce seismic building codes. • Property Protection: Retrofit vulnerable buildings. • Structural: Install earthquake-resistant infrastructure. • Emergency Services: Develop early warning systems and evacuation plans. • Public Information/Education: Provide public education on earthquake preparedness.
Extreme Temperatures	• Prevention: Promote tree planting and urban planning that mitigates heat islands. • Property Protection: Retrofit homes with better insulation and heating/cooling systems. • Emergency Services: Set up warming/cooling centers. • Public Information/Education: Educate residents on how to stay safe in extreme temperatures.

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Hazard	Potential Mitigation Actions Considered
Flash Flooding	• Prevention: Enforce floodplain zoning regulations. • Prevention: Implement or amend stormwater management ordinances to ensure that new developments include adequate stormwater infrastructure, reducing runoff and minimizing the risk of flash flooding. • Property Protection: Elevate buildings or relocate those in flood zones. • Property Protection: Install backflow protection devices in homes and buildings to prevent water from entering basements during flash flooding events, reducing property damage and health risks. • Structural: Build levees and stormwater management systems. • Natural Resource Protection: Preserve wetlands to absorb floodwaters. • Natural Resource Protection: Wetland restoration and riverine ecosystem restoration to absorb peak flows. • Emergency Services: Set up early flood warning systems. • Public Information/Education: Inform the public about flood risks and safety measures. • Public Information/Education: Install road signage to warn drivers of flood-prone areas, such as low-water crossings or roads near rivers, and provide real-time updates about road closures or hazards during flood events.
Hazardous Materials (including Radiological)	• Prevention: Enforce stricter hazardous material transport and storage regulations. • Property Protection: Ensure containment systems are in place for hazardous materials. • Emergency Services: Strengthen hazardous materials response capabilities by training first responders, acquiring specialized equipment, and developing detailed response plans for HazMat incidents. • Public Information/Education: Raise awareness of HazMat safety procedures in the community.

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Hazard	Potential Mitigation Actions Considered
River Flooding	• Prevention: Implement riverbank stabilization and zoning around floodplains. • Prevention: Update floodplain mapping and conduct studies to ensure accurate identification of flood-prone areas, helping to guide development decisions and protect at-risk properties. • Property Protection: Buyout properties frequently flooded and relocate structures. • Property Protection: Elevate homes and buildings located in flood-prone areas to reduce the risk of flood damage and ensure structures are above expected flood levels. • Property Protection: Implement flood-proofing measures for infrastructure, such as elevating utilities, sealing buildings, and installing barriers to prevent water infiltration in flood-prone areas. • Structural: Construct levees, floodwalls, and retention basins. • Natural Resource Protection: Promote riverine restoration to mitigate flood impacts. • Natural Resource Protection: Protect and restore wetlands to act as natural buffers that absorb floodwaters, reduce flood peaks, and prevent downstream flooding during river flood events. • Emergency Services: Establish flood early warning systems. • Public Information/Education: Educate the public on flood preparedness and response.
Severe Thunderstorms	• Prevention: Enforce stronger building codes for wind resistance. • Property Protection: Install lightning protection systems on buildings. • Structural: Strengthen drainage systems to prevent flooding. • Natural Resource Protection: Preserve natural barriers that protect against storm impacts. • Emergency Services: Develop real-time thunderstorm warning systems. • Public Information/Education: Inform residents about storm safety practices. • Public Information/Education: Achieve StormReady designations to ensure that cities and counties are well-prepared for severe thunderstorms, with established communication and emergency response systems in place to protect residents.

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Hazard	Potential Mitigation Actions Considered
Severe Winter Storms	• Prevention: Improve local infrastructure to be more resilient to ice and snow. • Property Protection: Retrofit homes and facilities with storm-resistant materials. • Structural: Strengthen power grid systems against ice accumulation. • Emergency Services: Implement emergency snow removal and heating shelters. • Public Information/Education: Educate the public on preparedness for winter storms.
Social Unrest	• Prevention: Strengthen community outreach programs to reduce tensions. • Emergency Services: Develop security plans for public spaces during unrest. • Public Information/Education: Educate the community about peaceful conflict resolution.
Space Weather	• Prevention: Implement protective measures for critical infrastructure like power grids. • Structural: Harden infrastructure against electromagnetic storms. • Emergency Services: Establish contingency plans for satellite and power failures. • Public Information/Education: Raise awareness about space weather and its potential impacts.
Supply Chain Disruption	• Prevention: Strengthen logistics networks through diversification. • Emergency Services: Develop emergency supply chain continuity plans. • Public Information/Education: Inform businesses about the importance of supply chain resilience.
Terrorism	• Prevention: Increase surveillance and access control measures. • Prevention: Enhance security measures at Tier II facilities to protect against potential terrorist attacks targeting critical infrastructure and hazardous materials, ensuring that these sites are not exploited for mass violence or sabotage. • Property Protection: Secure critical infrastructure from physical attacks. • Emergency Services: Train responders for mass casualty events. • Public Information/Education: Promote public awareness about identifying suspicious activities.

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Hazard	Potential Mitigation Actions Considered
Tornadoes	• Prevention: Enforce zoning to reduce building density in high-risk areas. • Property Protection: Promote construction of safe rooms and shelters. • Structural: Strengthen building designs to withstand high winds. • Emergency Services: Implement tornado warning systems. • Emergency Services: Include mass casualty preparation in tornado response plans, ensuring that emergency medical services and shelters are ready to care for injured individuals after a severe tornado. • Public Information/Education: Educate residents on tornado safety measures.
Wildfire	• Prevention: Implement land use controls in fire-prone areas. • Property Protection: Create defensible space around homes. • Property Protection: Promote the installation of smoke detectors in homes and public buildings near wildfire-prone areas, and enforce fire prevention measures such as clearing brush and maintaining defensible space around structures. • Property Protection: Install outdoor sprinkler systems around homes, businesses, and critical facilities in wildfire-prone areas to help prevent the spread of fire to structures by keeping vegetation and surrounding areas moist. • Structural: Build firebreaks and install fire-resistant materials. • Structural: Improve water supply systems to ensure adequate water availability for firefighting operations in wildfire-prone areas, including the installation of additional hydrants and water storage facilities. • Natural Resource Protection: Conduct controlled burns to reduce fuel loads. • Emergency Services: Set up early wildfire detection and evacuation plans. • Emergency Services: Use emergency assistance registration to track and assist individuals and families needing evacuation support, shelter, or emergency relief during and after wildfires. • Emergency Services: Improve fire response capabilities by increasing the availability of firefighting resources, training, and equipment to more effectively combat wildfires, particularly in high-risk areas. • Public Information/Education: Run public campaigns on wildfire safety and preparedness.

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The mitigation actions considered for the planning area align well with the established mitigation goals. These actions were designed to protect critical facilities, infrastructure, and community assets by focusing on strengthening existing structures and improving key systems. Examples of actions considered include constructing floodwalls, retrofitting buildings to withstand hazards like tornadoes and earthquakes, and enhancing drainage systems to prevent flooding. By incorporating redundancy and hardening measures for critical infrastructure, these actions aimed to ensure that essential services remain operational during and after disaster events.

The considered actions also prioritized the protection of residents' health, safety, and property. Measures such as constructing safe rooms, reinforcing homes against high winds, and developing early warning systems were intended to safeguard lives and minimize property damage. Emergency services measures, including establishing cooling and warming centers during extreme temperatures, stockpiling medical supplies for disease outbreaks, and creating evacuation routes, were focused on providing immediate protection during and after hazard events.

A key component of the considered mitigation strategy was improving education and awareness. Each hazard included public information and education programs aimed at enhancing the community's understanding of risks and teaching individuals how to reduce their vulnerability. Programs focused on cybersecurity, wildfire risk, tornado preparedness, and extreme weather safety were considered to contribute to a more informed and resilient community by promoting proactive measures.

Lastly, the considered mitigation actions ensured efficient use of public funds by emphasizing long-term risk reduction through preventative measures, such as zoning regulations, biosecurity efforts, and natural resource protection initiatives. Actions like floodplain restoration and controlled burns were evaluated not only for preserving natural systems but also for reducing future disaster-related costs. Public education campaigns, which enhance preparedness at a relatively low cost, were also considered to extend the impact of public resources by reducing the need for large-scale emergency responses. Overall, these considered actions supported the planning area's goals of reducing hazard risks, enhancing community resilience, improving infrastructure, and expanding public awareness, positioning the area to manage and mitigate future risks effectively.

4.3.1 Mitigation and Preparedness Actions

Preparedness items, even intangible ones like public outreach, can serve as powerful tools for disaster mitigation by proactively addressing vulnerabilities and reducing the

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potential impact of future incidents. Public outreach, for instance, contributes to mitigation in the following ways:

- **Risk Awareness and Education:** Public outreach campaigns inform community members about local hazards, their potential consequences, and the steps they can take to reduce risks. Educated individuals are more likely to support and adopt mitigation measures, such as floodproofing homes or creating defensible space around properties in wildfire-prone areas.
- **Behavioral Change:** Through targeted messaging, outreach programs can influence behaviors that directly reduce hazard risks. For example, encouraging residents to secure heavy furniture in earthquake-prone areas mitigates the risk of injury and property damage. Promoting proper disposal of hazardous materials minimizes the potential for contamination during a flood or storm.
- **Building a Culture of Preparedness:** When communities understand the importance of preparedness, they become more engaged in mitigation activities. Public outreach fosters a culture where mitigation actions—such as participating in community planning meetings, installing storm shutters, or supporting the creation of green infrastructure—are normalized and prioritized.
- **Strengthening Partnerships:** Outreach often involves collaboration with community organizations, businesses, and schools. These partnerships enhance the dissemination of mitigation-related information and resources, ensuring that diverse populations, including vulnerable groups, are reached effectively.
- **Promoting Funding and Policy Support:** An informed community is more likely to advocate for mitigation funding and support policies that reduce long-term risk. For instance, public outreach campaigns explaining the benefits of zoning regulations in floodplains can lead to stronger community backing for such measures.
- **Enhancing Emergency Response and Recovery:** By promoting actions such as developing family communication plans or organizing neighborhood response teams, public outreach ensures that individuals and communities are better equipped to handle disasters. These preparedness measures reduce the strain on emergency services and aid in faster recovery, effectively mitigating cascading impacts.



4.4 Mitigation Action Plan

Element Addressed in Section
Element C4. Does the plan identify and analyze a comprehensive range of specific mitigation actions and projects for each jurisdiction being considered to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure? (Requirement 44 CFR § 201.6(c)(3)(ii)), including requirement C4-b .
Element C5. Does the plan contain an action plan that describes how the actions identified will be prioritized (including a cost-benefit review), implemented, and administered by each jurisdiction? (Requirement 44 CFR § 201.6(c)(3)(iv)); (Requirement §201.6(c)(3)(iii)), including requirement C5-b .

This section outlines the development of the final mitigation action plan, which includes the specific actions designed to achieve the plan’s goals. Progress on the implementation of these actions will be tracked over time to measure the plan's effectiveness in meeting its objectives. Some actions are not applicable to jurisdictions that are not impacted by the hazard, such as river flooding traditionally only impacts jurisdictions with rivers or streams running through them.

The mitigation actions in this section were developed by reviewing the previous plan’s actions and evaluating progress, alongside the information in **Section 2: Whole Community Profile**. The STAPLEE assessment process was applied, with a focus on both new and existing buildings and infrastructure. These actions were then shared with planning stakeholders for review and approval during the draft process.

Each mitigation action details specific strategies for reducing future hazard-related losses in the planning area. The actions include estimated costs (if available), potential funding sources, timelines, goals supported, associated hazards, relevant stakeholders, and their assigned priority—high, medium, or low. While many of these actions’ projects are managed at the department/office-head level, it is ultimately the responsibility of the jurisdictions chief elected/appointed official to implement the mitigation actions, i.e., Board of Supervisor Chair, Mayor, or Superintendent.

The parameters for the timeline are as follows:

- Short-term: To be completed in one to two years
- Medium-term: To be completed in three to five years
- Long-term: To be completed in greater than five years
- Ongoing: Currently being funded and implemented under existing programs

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Action: Acquisition of Flood-Prone Structures		Action #: 1	
Description: Acquisition and demolition of structures with a significant history of flood damage to permanently reduce flood-related disaster losses. By removing these structures, the area can potentially be restored to natural floodplain conditions, reducing flood impacts on surrounding areas.			
Hazard(s) Covered: Flash/River Flooding		Jurisdiction(s) Assigned: Unincorporated areas, Anamosa, Martelle, Monticello, Morley, Olin, Onslow, Oxford Junction, Wyoming	
New/Previous Action: 1	Goal(s) Supported: Goal 2	Priority: High	
Cost: High Cost		Benefit: High	
Potential Funding Source(s): Hazard Mitigation Grant Program, Pre-Disaster Mitigation Grant Program, Severe Repetitive Loss Program, US Army Corps of Engineers (USACE), Community Development Block Grant (CDBG)		Timeline: Ongoing – Action is implemented as needed or when grants become available, typically following major flood events. Projects of this nature may span over 5 years per cycle, classifying them as long-term initiatives due to funding and logistical needs.	
STAPLEE Assessment:		This action aligns well with environmental and technical feasibility considerations, as acquiring and removing flood-prone properties supports public safety and environmental restoration. Challenges include community decision-making around specific properties, managing asbestos or contamination in demolished structures, extensive administration requirements, and potential landfill waste from demolition.	
Responsible:		County Emergency Management Director, County Engineer, Municipal Public Works Director	

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Action: Backup Generators		Action #: 2	
Description: Install backup generators at critical facilities, including emergency services buildings, shelters, and water treatment plants, to ensure continuous operations during power outages caused by natural or man-made hazards.			
Hazard(s) Covered: Severe Storms, Winter Storms		Jurisdiction(s) Assigned: All jurisdictions	
New/Previous Action: 2	Goal(s) Supported: Goal 1 and Goal 2	Priority: High	
Cost: High Cost		Benefit: High	
Potential Funding Source(s): FEMA Hazard Mitigation Grant Program (HMGP), Pre-Disaster Mitigation Grant Program (PDM), city general funds, county general funds, Community Development Block Grant (CDBG)		Timeline: Medium-term (3-5 years)	
STAPLEE Assessment:		The installation of backup generators is broadly supported within the community, enhancing essential service continuity during outages. Technically feasible, the action requires coordination across jurisdictions to ensure proper facility coverage. Politically and legally favorable, it supports emergency response without regulatory barriers. While the initial cost is high, the investment is justified by the reduction in service interruptions. Environmentally, impacts are minimal, with manageable considerations for fuel storage and emissions.	
Responsible:		County Emergency Management Director, County Engineer, Municipal Public Works Directors, School Facilities Directors	

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Action: Bury or Harden Power Lines		Action #: 3	
Description: Bury or reinforce power lines to prevent damage from severe weather events, thereby reducing the likelihood of power outages and improving infrastructure resilience.			
Hazard(s) Covered: Severe Thunderstorms, Severe Winter Storms, Tornadoes		Jurisdiction(s) Assigned: Unincorporated areas, Anamosa, Monticello, Morley, Onslow, and Wyoming	
New/Previous Action: 3		Goal(s) Supported: Goal 1 and Goal 2	
Cost: High Cost		Priority: Medium	
Potential Funding Source(s): Federal and state grants, Utility company partnerships, city general funds, county general funds		Benefit: Long-term (over 5 years)	
STAPLEE Assessment:		This action is well-supported within the community, offering reliable power continuity during severe weather events. Technically feasible, it requires significant funding and coordination with utility companies, especially in targeted jurisdictions. Politically favorable, it aligns with safety and infrastructure reliability objectives. Although the initial cost is high, it is economically justified by reduced repair costs and outage durations. Environmentally, impacts are minimal but may require site planning for sensitive areas.	
Responsible:		County Engineer, Municipal Public Works Directors, School Facilities Directors	

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Action: Community Outreach		Action #: 4	
Description: Engage local governments and partner agencies to raise public awareness about various hazards and promote mitigation techniques and insurance options for property owners. This will primarily be coordinated through Jones County EMA that covers all jurisdictions using public outreach events and on social media.			
Hazard(s) Covered: All hazards		Jurisdiction(s) Assigned: All Jurisdictions	
New/Previous Action: 4	Goal(s) Supported: Goal 3 and Goal 4	Priority: Medium	
Cost: Low to Medium Cost		Benefit: High	
Potential Funding Source(s): City general funds, county general funds, federal grants, and partnerships with community organizations.		Timeline: Ongoing	
STAPLEE Assessment:		Community outreach has strong social support, as it directly involves educating residents on hazard preparedness and safety practices. The action is technically feasible and administratively manageable, with necessary partnerships among local agencies and organizations. Politically favorable due to its public safety focus, it may involve coordination with private organizations, especially for topics like insurance. Economically low to medium cost, it provides broad environmental benefits through education on best practices in fire safety, flood risk, and other hazard awareness. Additionally, incorporating water conservation efforts enhances community resilience by promoting sustainable water use, reducing demand during drought conditions, and supporting long-term resource management. Expanding outreach to include dam inundation risk areas ensures that residents in vulnerable locations are informed about potential flood hazards, evacuation procedures, and mitigation strategies, strengthening overall preparedness and response capabilities.	
Responsible:		County Emergency Management Director, Fire Chiefs, Municipal Police Chiefs, Sheriff	

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Action: Critical Infrastructure Protection		Action #: 5	
Description: This action involves strengthening the preparedness and response capabilities for critical infrastructure within the planning area. This includes infrastructure within sectors such as financial services, transportation, public works, and other key areas as identified by the Department of Defense. Measures may include enhanced security systems, backup power, and resilience upgrades.			
Hazard(s) Covered: Critical Infrastructure Failure, Flash Flooding, Severe Winter Storms, Terrorism & Mass Violence		Jurisdiction(s) Assigned: All Jurisdictions	
New/Previous Action: 5	Goal(s) Supported: Goal 1, 3, and 4	Priority: High	
Cost: Medium to High		Benefit: High	
Potential Funding Source(s): HSEMD Threat Information and Protection Program (TIPP), FEMA Buffer Zone Protection Program (BZPP), city general funds, county general funds		Timeline: Ongoing	
STAPLEE Assessment:		Critical Infrastructure Protection is widely supported, addressing public safety by enhancing resilience in key infrastructure. Technically feasible, it requires strategic coordination across agencies for prioritization and funding. Politically favorable due to its alignment with public safety and infrastructure reliability goals, it encounters minimal regulatory barriers. Although the economic cost is considerable, funding sources are available to mitigate financial strain. Environmentally, the project poses minimal impact, though compliance with sector-specific standards is required.	
Responsible:		County Emergency Management Director, County Engineer, Municipal Public Works Directors, Municipal Police Chiefs, Sheriff	

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Action:	Dam Warning Signage and/or Water Safety Signage			Action #:	6
Description:	Install warning and safety signage upstream of dams to alert recreational users (e.g., boaters, swimmers) about the presence of dams, appropriate safety distances, and potential inundation risks associated with dam failure. Signage should include information on downstream hazard areas, potential flood pathways, and emergency procedures in the event of a dam breach or failure. This action aims to reduce accidental entrapment, improve safety for waterway users, and enhance public awareness of inundation risks.				
Hazard(s) Covered:	Dam Failure, Flash Flooding		Jurisdiction(s) Assigned:	Jones County	
New/Previous Action:	6	Goal(s) Supported:	Goal 3	Priority:	Medium
Cost:	Low to Medium		Benefit:	High	
Potential Funding Source(s):	Iowa Department of Natural Resources (DNR) Low-Head Dam Public Hazard Program, Iowa Water Trails Mini Grants, county general funds			Timeline:	Short-term (1-2 years) to completion, with ongoing maintenance as necessary.
STAPLEE Assessment:	Dam warning signage is well-supported within the community for its role in increasing public safety on waterways and raising awareness of potential inundation risks. Technically feasible and straightforward, it requires collaboration with local jurisdictions and dam owners for installation and maintenance. The action is politically favorable, aligning with community safety goals, and has minimal environmental impact. Economically, the cost is low relative to the significant safety benefits. While signage alone does not mitigate the physical impacts of dam failure, it serves as an important risk communication tool, ensuring that waterway users are informed of potential flood hazards and evacuation procedures in the event of an emergency.				
Responsible:	County Emergency Management Director, County Engineer, Municipal Public Works Directors				

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Action: Early Warning Systems		Action #: 7	
Description:		Install or expand early warning systems to provide immediate alerts for various hazards, such as tornadoes and hazardous material incidents, using methods like siren coverage and county-wide reverse 911 systems.	
Hazard(s) Covered:		Tornadoes, Hazardous Materials, Thunderstorms, Severe Winter Storms	Jurisdiction(s) Assigned: All Jurisdictions
New/Previous Action:	8	Goal(s) Supported:	Goals 1, 3, and 4
Cost: Medium to High		Benefit: High	
Potential Funding Source(s):		HMGP, BRIC, FMA, city general funds, county general funds	Timeline: Ongoing
STAPLEE Assessment:		The early warning systems receive strong community support for enhancing public safety and preparedness. Technically feasible with well-established installation procedures, the project may face economic and technical challenges, including maintenance and potential costs for local governments. Politically favorable, this action aligns with public safety objectives and has minimal environmental impact. While initial setup costs are high, long-term benefits justify the investment through improved community readiness and risk reduction.	
Responsible:		County Emergency Management Director, Municipal Public Works Directors	

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Action: Elevation of Flood-Prone Structures			Action #: 8
Description: Elevate flood-prone structures and critical infrastructure located within the 100-year floodplain or areas with a history of flooding. This involves lifting the structure from its foundation and constructing a higher base, reducing vulnerability to future flood events.			
Hazard(s) Covered: Flash Flooding, River Flooding		Jurisdiction(s) Assigned: Jones County, Monticello, Morley, Olin, Oxford Junction	
New/Previous Action: 9	Goal(s) Supported: Goals 1, 2, and 3		Priority: High
Cost: High		Benefit: High	
Potential Funding Source(s): Hazard Mitigation Grant Program (HMGP), Flood Mitigation Assistance (FMA), Increased Cost of Compliance coverage through the NFIP			Timeline: Ongoing
STAPLEE Assessment: Elevating flood-prone structures has strong community support due to the clear risk reduction benefits for property owners and community safety. Technically feasible, the process requires skilled labor and engineering support for structural integrity. Politically, it aligns with community goals for flood resilience. The action requires significant funding, but federal grants can assist with the financial burden. Environmentally, the impact is minimal, though careful planning is needed to avoid impacts on natural floodplain functions.			
Responsible: County Engineer, Municipal Public Works Directors, Municipal Floodplain Administrators			

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Action:	Floodplain Management			Action #:	9
Description:	Floodplain management includes regulating development in designated special flood hazard areas to minimize flood risks. This action enforces NFIP standards and may include policies like maintaining a freeboard requirement in the 100-year floodplain. Participating jurisdictions manage regulations and policies to prevent hazardous development in flood-prone areas.				
Hazard(s) Covered:	Flash Flooding, River Flooding	Jurisdiction(s) Assigned:	Jones County, Oxford Junction		
New/Previous Action:	13	Goal(s) Supported:	Goals 1, 2, and 4	Priority:	High
Cost:	Low to High		Benefit:	High	
Potential Funding Source(s):	Flood Mitigation Assistance (FMA), Severe Repetitive Loss Program (SRL), Hazard Mitigation Grant Program (HMGP), Pre-Disaster Mitigation (PDM), U.S. Army Corps of Engineers (USACE)			Timeline:	Ongoing
STAPLEE Assessment:	Floodplain management enjoys broad community support as it reduces flood damage risk for the area. Technically feasible and administratively managed at the local level, it aligns well with political and legal frameworks under the NFIP. Economically, the regulatory action is cost-effective, though additional training for staff may be necessary. Environmentally, this action has significant positive impacts, as it preserves natural floodplain functions and minimizes construction in sensitive areas. This structure follows the specified format, integrating the relevant jurisdictions and hazards.				
Responsible:	County Emergency Management Director, County Engineer, Municipal Public Works Directors, Municipal Floodplain Administrators				

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Action: Flood-Proofing Infrastructure		Action #: 10	
Description:		Implement flood-proofing measures for critical infrastructure, including roads, bridges, utility lines, water treatment facilities, and sewer treatment plants. Flood-proofing options may involve constructing partial floodwalls, elevating essential components, or using water-resistant materials to seal structures, typically in the form of dry flood-proofing. Wet flood-proofing methods may also be employed, allowing water to flow through designated areas without causing significant damage.	
Hazard(s) Covered: Flash Flooding, River Flooding		Jurisdiction(s) Assigned: All Jurisdictions, all schools except for Monticello CSD and St. Patrick's, except Onslow	
New/Previous Action: 14	Goal(s) Supported: Goals 1, 2, and 4	Priority: High	
Cost: High		Benefit: High	
Potential Funding Source(s): Hazard Mitigation Grant Program (HMGP), Pre-Disaster Mitigation (PDM) Program, U.S. Army Corps of Engineers (USACE)		Timeline: Ongoing	
STAPLEE Assessment:		Flood-proofing critical infrastructure is highly supported within the community, given its significant impact on reducing flood damage and maintaining essential services. Technically complex and administratively demanding, these projects require interagency coordination and skilled labor. Politically favorable, the action aligns with safety and resilience priorities, though economic challenges arise due to high initial costs. Environmentally, the impact is generally positive, as flood-proofing preserves infrastructure and reduces potential contamination from damaged facilities.	
Responsible:		County Engineer, Municipal Public Works Directors	

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Action: Maintaining Adequate Emergency Response Personnel		Action #: 11	
Description: Ensure adequate emergency response personnel through training, recruitment, and resource allocation. This action includes facilitating training in hazardous response and providing continuous skill development to strengthen response capabilities.			
Hazard(s) Covered: Hazardous Materials, Terrorism & Mass Violence, Social Unrest, Wildfire, Critical Infrastructure Failure		Jurisdiction(s) Assigned: All Jurisdictions	
New/Previous Action: 18	Goal(s) Supported: Goals 1 and 2	Priority: High	
Cost: Low to High		Benefit: Medium	
Potential Funding Source(s): FEMA's Staffing for Adequate Fire and Emergency Response (SAFER) Grants, Assistance to Firefighters Grants, Emergency Management Institute (EMI), Federal Law Enforcement Training Centers (FLETC)		Timeline: Ongoing	
STAPLEE Assessment:		Maintaining adequate response personnel is widely supported within the community as it strengthens public safety and hazard response. Technically and administratively feasible, this action utilizes existing training resources but may face funding challenges when adding personnel. Politically favorable, the action aligns with public safety priorities. Economically, training is cost-effective, though additional personnel increases costs. The environmental impact is minimal, as it focuses on human resource development rather than infrastructure.	
Responsible:		Fire Chiefs, Municipal Police Chiefs, Sheriff	

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Action: Safe Rooms		Action #: 12	
Description:		Construct or retrofit safe rooms to FEMA publication 361 guidelines, providing high-level protection against tornadoes and extreme wind events. Safe rooms may be integrated into new structures or existing buildings to serve as community shelters during hazardous weather.	
Hazard(s) Covered:		Tornadoes, Severe Thunderstorms, Extreme Temperatures	Jurisdiction(s) Assigned: All Jurisdictions
New/Previous Action:	19	Goal(s) Supported:	Goals 1, 2, and 3
Cost: High		Benefit: High	
Potential Funding Source(s):		Timeline:	
Hazard Mitigation Grant Program (HMGP), Pre-Disaster Mitigation (PDM) Program, Local Capital Improvement Program		Short-term (1-2 years) if funding is available; otherwise, ongoing as construction projects align with grant opportunities.	
STAPLEE Assessment:		Safe rooms receive strong support due to their lifesaving potential in tornado-prone areas. Technically and administratively feasible, but requiring careful site selection and maintenance. While high in cost, the social and safety benefits are substantial, aligning with community priorities. Environmentally, the impact is minimal as safe rooms are often part of existing structures or public buildings.	
Responsible:		County Emergency Management Director, County Engineer, Municipal Public Works Directors, School Facilities Directors	

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Action: Storm Drainage System Improvements		Action #: 13	
Description:		Address issues with storm drainage systems that contribute to flash flooding, such as low capacity, inadequate maintenance, clogs, and illegal tie-ins. Actions include expanding drainage capacity, removing illegal connections to alleviate surface flooding on roadways and other vulnerable areas, and the restoration and recreation of wetlands as part of the potential improvements to the storm drainage system.	
Hazard(s) Covered: Flash Flooding		Jurisdiction(s) Assigned: All Jurisdictions	
New/Previous Action: 21	Goal(s) Supported:	Goals 1 and 2	Priority: High
Cost: High		Benefit: High	
Potential Funding Source(s):		Timeline:	
Hazard Mitigation Grant Program (HMGP), Community Development Block Grants (CDBG)		Ongoing - As funding becomes available, with short-term improvements as needed.	
STAPLEE Assessment:		Improving storm drainage systems is widely supported for its direct impact on reducing flooding risk and improving road safety. Technically and administratively complex, this action requires coordination between local governments and utility services. Although costly, funding sources provide substantial support. Environmental impacts are minimal and often positive, as these improvements help manage water flow and prevent overflow into natural habitats.	
Responsible:		County Engineer, Municipal Public Works Directors	

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Action: System Improvements (Sewer/Wastewater)		Action #: 14	
Description:		Address identified issues within sewer and wastewater systems, including flooding of lagoons and treatment plants during high-water events, stormwater infiltration, lack of sufficient valves, insufficient capacity, and treatment methods requiring hazardous material storage. Improvements focus on enhancing flood resilience, reducing infiltration, and improving treatment quality.	
Hazard(s) Covered:		Flash Flooding, River Flooding, Critical Infrastructure Failure	Jurisdiction(s) Assigned: All Jurisdictions, except Olin
New/Previous Action:	22	Goal(s) Supported:	Goals 1 and 2
Cost: High		Benefit: High	
Potential Funding Source(s):		Hazard Mitigation Grant Program (HMGP), Community Development Block Grant (CDBG), EPA Clean Water State Revolving Fund	Timeline: Long-Term
STAPLEE Assessment:		Sewer and wastewater system improvements are strongly supported by the community due to their direct public health and environmental benefits. Technically feasible and administratively managed by local governments, these projects may require additional coordination for effective implementation. While economically challenging due to high costs, available federal and state funding helps reduce the financial burden. Environmentally, the action is beneficial, improving water quality and minimizing untreated effluent discharge during flood events.	
Responsible:		County Engineer, Municipal Public Works Directors	

Section 4: Mitigation Strategy

Action: System Improvements (Power)		Action #: 15	
Description:		Implement power system improvements, including burying power lines, upgrading substations, and enhancing grid resilience against severe weather events. This action will help reduce outages and improve reliability during extreme conditions.	
Hazard(s) Covered:		Severe Winter Storms, Tornadoes, Thunderstorms, Critical Infrastructure Failure	Jurisdiction(s) Assigned: All Jurisdictions, except Cascade
New/Previous Action:	23	Goal(s) Supported:	Goals 1, 2, and 4
Cost: High		Benefit: High	
Potential Funding Source(s):		Hazard Mitigation Grant Program (HMGP), Community Development Block Grant (CDBG), Federal Emergency Management Agency (FEMA) Infrastructure Program	Timeline: Long-Term
STAPLEE Assessment:		Community support is high for enhanced power resilience, particularly in vulnerable areas prone to outages. Technically feasible, though coordination with utilities and phased implementation are required. Politically favorable, this action aligns with resilience priorities and addresses critical infrastructure reliability. While costly, long-term benefits justify the investment. Environmental impacts are minimal, particularly for buried lines, which reduce environmental disruption during storm events.	
Responsible:		County Engineer, Municipal Public Works Directors, School Facilities Directors	

Section 4: Mitigation Strategy

Action: Stormwater Management Ordinances and Amendments		Action #: 16	
Description: Establish or amend local ordinances to enhance stormwater management for both new and existing developments. These ordinances focus on reducing runoff and improving water quality by incorporating best practices and private property regulations, along with public education on stormwater management.			
Hazard(s) Covered: Flash Flooding, River Flooding		Jurisdiction(s) Assigned: All Jurisdictions, except Jones County	
New/Previous Action: 24	Goal(s) Supported: Goals 1, 2, and 3	Priority: Medium	
Cost: Low		Benefit: Low to Medium	
Potential Funding Source(s): EPA Targeted Watershed Grants, Wetland Program Development Grants, Section 319 Nonpoint Source Implementation Grants, Section 106 Water Pollution Control Program Grants, DNR Watershed Improvement Grants, city general funds		Timeline: Short-term (1-2 years) for ordinance development, with ongoing revisions as needed.	
STAPLEE Assessment:		Stormwater management ordinances are broadly supported for reducing local flooding and improving water quality. Technically feasible and administratively manageable, these actions require coordination with landowners and regulatory agencies. Politically favorable, though potentially contentious regarding private property rights, this approach is economical with minimal environmental impact, promoting sustainable development and flood risk reduction.	
Responsible:		County Engineer, Municipal Public Works Directors	

Section 4: Mitigation Strategy

Action: Smoke Detectors and Fire Prevention Measures		Action #: 17	
Description: Implement wildfire detection and prevention systems in high-risk areas, including installing smoke and fire detectors, providing fire-resistant landscaping education, and conducting public outreach on wildfire safety and property maintenance. These measures aim to increase community preparedness and reduce wildfire risk.			
Hazard(s) Covered: Wildfire		Jurisdiction(s) Assigned: All Jurisdictions	
New/Previous Action: 27	Goal(s) Supported: Goals 1, 2, and 3	Priority: High	
Cost: Low to Medium		Benefit: Medium	
Potential Funding Source(s): Fire Prevention and Safety (FP&S) Grants, U.S. Forest Service, State Fire Assistance Program, Community Wildfire Protection Plans (CWPP) grants, city general funds, county general funds		Timeline: Ongoing - Measures implemented as part of continuous fire prevention and education programs.	
STAPLEE Assessment:		Community support is high for wildfire detection and prevention, as it addresses public safety and property protection. Technically feasible and low-cost, these measures are manageable at the local level. Politically favorable, this action aligns with community resilience priorities. Economically, while some initiatives require funding, the costs are manageable and offset by the prevention benefits. Environmentally, these efforts promote sustainable, fire-resistant landscaping practices and contribute to ecosystem protection.	
Responsible:		County Emergency Management Director, Fire Chiefs	

Section 4: Mitigation Strategy

Action: Wetland Protection		Action #: 18	
Description: Protect and restore wetland areas to improve water quality, reduce stormwater runoff, enhance flood control, and support natural habitat. Wetland protection helps to prevent unsuitable development in vulnerable areas, lowering disaster loss risks and promoting environmental health.			
Hazard(s) Covered:	Flash Flooding, River Flooding, Drought	Jurisdiction(s) Assigned:	Jones County, Anamosa, Monticello, Olin, Oxford Junction, Wyoming
New/Previous Action:	31	Goal(s) Supported:	Goals 1, 2, and 4
Cost: Low to High		Benefit: Medium	
Potential Funding Source(s):	EPA Wetland Program Development Grants, Section 319 Nonpoint Source Implementation Grants, NRCS Conservation Reserve Enhancement Program (CREP), State Cost-Share Programs	Timeline:	Ongoing, with actions implemented as opportunities and funding arise.
STAPLEE Assessment:	Wetland protection is broadly supported due to its environmental benefits and flood mitigation potential. Technically feasible, it may require specialized ecological expertise. Politically favorable, it aligns with conservation priorities, though it may face economic challenges if extensive land acquisition is required. Environmentally beneficial, wetland preservation supports biodiversity and improves water quality while reducing flood risk.		
Responsible:	County Engineer, County Conservation Director, Municipal Public Works Directors		

Section 4: Mitigation Strategy

Action: Basement Backflow Protection			Action #: 19	
Description: Installation of backflow prevention devices to prevent sewage and stormwater from entering basements during flood events, protecting property from water damage and maintaining sanitary conditions.				
Hazard(s) Covered: River Flooding, Flash Flooding		Jurisdiction(s) Assigned: Jones County, Anamosa, Martelle, Monticello, Olin, Oxford Junction, Wyoming		
New/Previous Action: 33		Goal(s) Supported: Goals 1, 2, and 4		Priority: Medium
Cost: Medium		Benefit: High		
Potential Funding Source(s): Hazard Mitigation Grant Program (HMGP), Community Development Block Grant (CDBG), local capital improvement funds.			Timeline: Short-term (1-2 years) for installation of devices in high-risk areas, with ongoing maintenance as required.	
STAPLEE Assessment: This action is socially beneficial, enhancing residential resilience to basement flooding, a frequent concern among residents. Technically, backflow preventers are feasible and straightforward for installation; however, they may require regular maintenance, which can add a moderate administrative burden. Economically, this mitigation measure is cost-effective relative to the potential damage from flood events and aligns well with local flood management priorities. Politically, it is supported as it directly addresses community flooding issues, and it has minimal legal or environmental challenges, making it a favorable option across most criteria.				
Responsible: County Emergency Management Director, County Engineer, Municipal Public Works Directors				

Section 4: Mitigation Strategy

Action: Increased Security at Tier II Facilities		Action #: 20	
Description: Enhancing physical and electronic security measures at Tier II facilities, which store hazardous materials, to prevent unauthorized access, reduce the risk of accidental release, and improve response capabilities in case of an incident.			
Hazard(s) Covered:	Hazardous Materials, Terrorism	Jurisdiction(s) Assigned:	All Jurisdictions
New/Previous Action:	34	Goal(s) Supported:	Goals 1, 2, and 4
Cost:	High	Benefit:	High
Potential Funding Source(s):	Homeland Security Grant Program (HSGP), Hazard Mitigation Grant Program (HMGP), city general funds, county general funds, private-sector partnerships with facility operators.	Timeline:	Medium-term (3-5 years), allowing time for security assessments, funding acquisition, and phased implementation.
STAPLEE Assessment:	This action is socially advantageous as it directly enhances community safety by addressing potential hazards associated with hazardous material storage sites. Technically, installing security improvements is feasible, though specific facility requirements may vary. Economically, the high cost is justified by the significant benefit of preventing hazardous material incidents. Politically, the action is well-supported, as it aligns with public safety objectives. While some legal considerations may arise, especially regarding coordination with private facility operators, the environmental impact is minimal, primarily involving physical security enhancements rather than altering facility operations.		
Responsible:	County Emergency Management Director, Municipal Police Chiefs, Sheriff		

Section 4: Mitigation Strategy

Action: Improved Fire Response Capabilities			Action #: 21	
Description: Enhance the capacity of local fire departments and emergency services to respond effectively to wildfires by upgrading equipment, improving communication infrastructure, and providing specialized wildfire response training. This action aims to mitigate the impact of wildfires on communities, reduce response time, and enhance firefighter safety.				
Hazard(s) Covered: Wildfire		Jurisdiction(s) Assigned: All Jurisdictions		
New/Previous Action: 35		Goal(s) Supported: Goals 1, 2, and 4		Priority: High
Cost: High		Benefit: High		
Potential Funding Source(s):		Timeline:		
Hazard Mitigation Grant Program (HMGP), Assistance to Firefighters Grant (AFG), Fire Management Assistance Grant (FMAG), city general funds, county general funds, community grants.		Medium-term (3-5 years), with implementation in stages as funding becomes available.		
STAPLEE Assessment: This action provides clear social benefits by strengthening local firefighting response to wildfires, which protects communities and supports the safety of emergency responders. Technically feasible, it involves procuring updated equipment, specialized training, and upgrading communication systems for fire departments. Economically, while the cost is high, the investment is justified by the reduction in potential losses from wildfires. Politically, there is strong support for improving fire response capabilities, as wildfires are a recognized threat in the region. Legally, it aligns with local emergency management responsibilities, and environmentally, it supports the proactive containment of wildfires, reducing potential damage to natural resources and ecosystems.				
Responsible:		Fire Chiefs		

Section 4: Mitigation Strategy

Action: Cybersecurity Training		Action #: 22	
Description:		Implement a comprehensive cybersecurity training program for local government employees to enhance awareness of cyber threats, strengthen cybersecurity practices, and minimize the risk of data breaches and cyber incidents. This includes regular training sessions, simulated phishing exercises, and updates on emerging cyber risks.	
Hazard(s) Covered:		Cyber Incident	Jurisdiction(s) Assigned: All Jurisdictions
New/Previous Action:	N/A	Goal(s) Supported:	Goals 1, 2, and 3 Priority: High
Cost: Low		Benefit: High	
Potential Funding Source(s):		Homeland Security Grant Program (HSGP), city general funds, county general funds, Department of Homeland Security (DHS) Cybersecurity Training Grants, state IT grants.	Timeline: Short-term (1-2 years), with ongoing refresher training annually to keep staff updated on evolving cyber threats.
STAPLEE Assessment:		This action is socially beneficial, as it enhances the cybersecurity skills of government employees, ultimately protecting sensitive community and resident information. Technically, training programs are feasible to implement with many affordable or even free resources available. Economically, the low cost of training is justified by the high benefit of reducing the risk of costly cyber incidents. Politically, cybersecurity training is widely supported, aligning with both local and national efforts to improve cyber resilience. Legally, training aligns with privacy and security standards and supports compliance with state and federal cybersecurity regulations. Environmentally, this action has no adverse impacts, as it primarily involves digital training materials and software.	
Responsible:		County Emergency Management Director, Municipal Police Chiefs, Sheriff	

Section 4: Mitigation Strategy

Action: Mass Vaccination Protocols and Medical Supplies		Action #: 23	
Description:		Establish protocols for the rapid distribution of vaccines during large-scale outbreaks and create a stockpile of essential medical supplies. This includes coordinating with public health agencies, setting up distribution sites, training personnel on vaccination procedures, and ensuring an adequate reserve of vaccines, personal protective equipment (PPE), and medical essentials.	
Hazard(s) Covered:		Communicable Disease Outbreak	Jurisdiction(s) Assigned: All Jurisdictions
New/Previous Action:	N/A	Goal(s) Supported:	Goals 1, 2, 3, and 4
Cost: High		Benefit: High	
Potential Funding Source(s):		Public Health Emergency Preparedness (PHEP) Cooperative Agreement, FEMA Preparedness Grants, Centers for Disease Control and Prevention (CDC) grants, county and state health department funds, potential private or hospital partnerships.	Timeline: Medium-term (3-5 years), with ongoing maintenance and periodic updates based on evolving health risks.
STAPLEE Assessment:		This action is socially critical, as it directly contributes to public health and safety by ensuring the community's preparedness for disease outbreaks. Technically, developing vaccination protocols and stockpiling supplies is feasible but requires careful coordination with health agencies and secure storage facilities. Economically, the high initial cost is justified by the substantial reduction in potential healthcare costs and community disruption during outbreaks. Politically, the action is widely supported as it aligns with public health priorities and national pandemic preparedness efforts. Legally, the protocols must comply with health regulations and distribution guidelines, particularly concerning vaccine storage and handling. Environmentally, this action has minimal impact, with stockpiling involving indoor storage and minimal resource strain.	
Responsible:		County Public Health Director	

Section 4: Mitigation Strategy

Action: Satellite and Power Failures		Action #: 24	
Description: Develop and implement contingency plans to ensure continuity of operations during satellite and power outages. This includes identifying backup communication systems, alternative power sources such as generators and battery backups, and protocols for maintaining essential functions in case of prolonged outages.			
Hazard(s) Covered: Critical Infrastructure Failure, Space Weather		Jurisdiction(s) Assigned: All Jurisdictions	
New/Previous Action: N/A	Goal(s) Supported: Goals 1, 2, and 4		Priority: High
Cost: Medium to High		Benefit: High	
Potential Funding Source(s): Homeland Security Grant Program (HSGP), Pre-Disaster Mitigation (PDM) Program, Emergency Management Performance Grants (EMPG), city general funds, county general funds, utility partnerships.		Timeline: Medium-term (3-5 years), allowing for equipment acquisition, plan development, and testing.	
STAPLEE Assessment:		This action provides substantial social benefits by maintaining vital services during outages, which is essential for community safety and security. Technically, contingency plans and backup power solutions are feasible with existing technologies but require coordination among emergency services, utility providers, and other stakeholders. Economically, the cost is justified by the high benefit of continued service during critical failures, reducing downtime and potential damage from disruptions. Politically, the action is well-supported due to its alignment with public safety goals and resilience planning. Legally, these plans must comply with industry standards and local regulations for emergency preparedness, especially in managing power supplies and backup systems. Environmentally, the action's impact is minimal, as it primarily involves equipment installation and operational readiness rather than structural changes.	
Responsible:		County Engineer, Municipal Public Works Directors, School Facilities Directors	

Section 4: Mitigation Strategy

Action: Diversify Logistics Networks		Action #: 25	
Description: Diversify logistics and supply chains by establishing multiple suppliers and alternate transportation routes for critical goods and services. This project aims to reduce dependency on single supply lines, ensuring continuous access to essential resources (e.g., food, medical supplies, fuel) during supply chain disruptions.			
Hazard(s) Covered: Supply Chain Disruption, Critical Infrastructure Failure, Earthquake		Jurisdiction(s) Assigned: All Jurisdictions	
New/Previous Action: N/A		Goal(s) Supported: Goals 1, 2, and 4	
		Priority: High	
Cost: Medium		Benefit: High	
Potential Funding Source(s): Pre-Disaster Mitigation (PDM) Program, Homeland Security Grant Program (HSGP), Economic Development Administration (EDA) grants, state and county emergency management funds, private-sector partnerships.		Timeline: Medium-term (3-5 years), with initial planning and diversification efforts, followed by ongoing assessments.	
STAPLEE Assessment: Socially, this action supports the community by ensuring reliable access to essential goods, improving public confidence in local resilience. Technically feasible, it involves identifying alternative suppliers and logistical routes, which may require collaboration with private partners and other jurisdictions. Economically, the moderate cost is justified by the high benefit of avoiding supply shortages during emergencies. Politically, diversification efforts are widely supported as they align with resilience-building objectives, and legally, there are few barriers as this action primarily involves agreements and planning. Environmentally, diversifying logistics networks has a minimal impact, as it does not require significant physical infrastructure changes.			
Responsible: County Emergency Management Director, Fire Chiefs, Municipal Police Chiefs, Sheriff, County Public Health Director			

Section 4: Mitigation Strategy

Action: Disease Rapid Response Team		Action #: 26	
Description:		Establish and train rapid response teams to quickly contain and manage outbreaks of animal, plant, or crop diseases. These teams will be equipped with the necessary protective equipment, containment tools, and protocols for coordination with agricultural agencies and local stakeholders to prevent the spread of infectious diseases among livestock and crops, protecting local agriculture and food security.	
Hazard(s) Covered: Animal/Plant/Crop Disease		Jurisdiction(s) Assigned: All Jurisdictions	
New/Previous Action: N/A	Goal(s) Supported: Goals 1, 2, and 4	Priority: High	
Cost: Medium to High		Benefit: High	
Potential Funding Source(s): United States Department of Agriculture (USDA) grants, Pre-Disaster Mitigation (PDM) Program, local agricultural extension funds, state and county emergency management funds, partnerships with agricultural organizations.		Timeline: Medium-term (3-5 years), allowing time for team setup, training, and coordination with relevant agencies.	
STAPLEE Assessment:		Socially, this action is critical for communities reliant on agriculture, protecting local economies and food sources. Technically, establishing rapid response teams is feasible but requires specific expertise, protocols, and specialized equipment for handling and containing animal and plant diseases. Economically, while the cost is moderate to high, it is justified by the significant economic benefit of preventing the spread of disease, which can lead to substantial agricultural losses. Politically, the action is well-supported by agricultural stakeholders and local governments concerned about biosecurity. Legally, teams must adhere to state and federal guidelines for managing outbreaks of animal and plant diseases, particularly concerning biosecurity and containment practices. Environmentally, this action is beneficial as it protects ecosystems and agricultural areas from the rapid spread of disease, helping to maintain biodiversity and agricultural productivity.	
Responsible: County Public Health Director			

Section 4: Mitigation Strategy



SECTION 5: PLAN IMPLEMENTATION & MAINTENANCE



SECTION 5: PLAN IMPLEMENTATION & MAINTENANCE

5.1 Implementation

Element Addressed in Section

Element E2. Was the plan revised to reflect changes in priorities and progress in local mitigation efforts? (Requirement 44 CFR § 201.6(d)(3)), including requirement **E2-c.**

The purpose of formally adopting this Plan is to demonstrate buy-in from participating jurisdiction leadership, raise awareness of the Plan, and formalize the Plan's implementation. Through their formal mechanisms, the covered participants formally adopt the 2025 Jones County Multi-Jurisdictional Hazard Mitigation Plan. Copies of the adoption documents are in **Appendix C**.

Once adopted, the Plan faces the truest test of its worth: implementation. While this Plan contains many worthwhile projects, the planning stakeholders and/or covered jurisdictions must decide which action(s) to undertake first. Two factors will help make that decision: 1) the priority assigned to the actions in the planning process, and 2) funding availability. Low or no-cost projects most easily demonstrate progress toward successful plan implementation.

Implementation will be accomplished by adhering to the schedules identified for each action (see 4.5 Mitigation Action Plan) and through constant, pervasive, and energetic efforts to network and highlight each project's multi-objective, win-win benefits to the communities and planning stakeholders. These efforts include monitoring agendas, attending meetings, and promoting a safe, sustainable community. The three main components of implementation are:

- Implement the action plan recommendations of this Plan;
- Utilize existing rules, regulations, policies, and procedures already in existence; and
- Communicate the hazard information collected and analyzed through this planning process so that the community better understands what can happen where and what they can do themselves to be better prepared. Also, the "success stories" achieved through the planning stakeholders' ongoing efforts should be publicized.

5.1.1 Implementation and Maintenance of Previously Adopted Plan

The previously adopted plan included a process for implementation and maintenance, which was generally followed. The plan stated that the planning stakeholders would update the Plan every five (5) years unless it determined an update was needed sooner. Additionally, the planning stakeholders would convene in year four (4) to start the update process, which is followed through this plan update.

The updated plan acknowledges that information from the previous mitigation plan has been generally considered during the assessment of mitigation projects and initiatives. While this demonstrates some progress in local hazard mitigation efforts, additional work is needed to fully integrate this information into other planning mechanisms, such as comprehensive plans, capital improvement plans, and zoning ordinances, during "blue sky" planning opportunities. This highlights an area for future improvement to ensure that mitigation principles are more systematically incorporated into broader planning and policy development processes across the jurisdiction.

5.1.2 Role of Planning Stakeholders in Implementation and Maintenance

With the adoption of this plan update, the planning stakeholders will implement and maintain the Plan, spearheaded by the Jones County Emergency Management Agency. The planning stakeholders will act as an advisory body to see the plan successfully carried out and to report to their jurisdiction leadership and the public on the status of plan implementation and mitigation opportunities. The planning stakeholders agree to:

- Act as a forum for hazard mitigation issues;
- Disseminate hazard mitigation ideas and activities to all participants;
- Pursue the implementation of recommended projects;
- 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 increased community vulnerability to disasters;
- Maintain vigilant monitoring of multi-objective cost-share opportunities to help the community implement the plan's recommended projects for which no current funding exists;
- Identify opportunities to integrate the Plan's priorities, information, and actions into new and ongoing initiatives;
- Monitor and assist in implementation and update of this Plan;
- Report on plan progress and recommended changes; and
- Inform and solicit input from the public.

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Other duties include reviewing and promoting mitigation proposals, considering stakeholder concerns about hazard mitigation, passing concerns on to appropriate entities, and posting relevant information on jurisdiction websites, social media, and local community news publications. The covered jurisdictions will monitor funding opportunities to implement mitigation projects. This will include creating and maintaining a bank of ideas on meeting required local match or participation requirements. When funding does become available, the covered jurisdictions will be positioned to capitalize on the opportunity. The covered jurisdictions should monitor funding opportunities such as special pre- and post-disaster funds, special district budgeted funds, state and federal earmarked funds, and other grant programs, including those that can serve or support multi-objective applications.

5.2 Maintenance Strategy and Schedule

Element Addressed in Section

Element D2. Is there a description of the method and schedule for keeping the plan current (monitoring, evaluating, and updating the mitigation plan within a five-year cycle)? (Requirement 44 CFR § 201.6(c)(4)(i)), including requirement **D2-a, D2-b, and D2-c.**

This Plan is a living document that may be adjusted or updated as conditions change, actions progress, or new information becomes available. This section describes the method and schedules the participating jurisdictions will follow for monitoring, evaluating, and updating the Plan over the next five years.

5.2.1 Monitoring

Monitoring refers to tracking the implementation of the Plan over time. Jones County Emergency Management Agency will be responsible for contacting the covered jurisdictions and planning stakeholder members to determine the status of those mitigation actions. The Jones County Emergency Management Agency will also coordinate with planning stakeholder members throughout the five-year cycle to identify and track significant changes in their organizations' mitigation efforts.

Planning stakeholder members will use the following process to track progress, note changes in hazards, risks, or vulnerabilities, and consider changes in priorities as a result of project implementation:

- Each organization identified in the mitigation actions is responsible for maintaining a representative on the planning stakeholders to track and report on

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the status of listed projects. The representative will provide input on whether the implemented project meets the defined goals and objectives and is likely to reduce vulnerabilities successfully.

- If the project does not meet identified goals and objectives, the planning stakeholders may select alternative projects for implementation or adjust listed projects as deemed appropriate by the planning stakeholders.
- Projects not ranked high priority but identified as potential mitigation strategies will be reviewed periodically to determine the feasibility of future implementation.
- New mitigation projects require a designated responsible organization to define and submit to Jones County Emergency Management Agency to add to the Plan, implement, and monitor the project's success.
- Mitigation activities not identified as actions in this Plan will also be tracked to ensure a comprehensive hazard mitigation program and to assist with future updates.
- Planning stakeholders participating in new or ongoing mitigation-related initiatives outside of the planning stakeholders should share opportunities for participation and collaboration with the rest of the members and invite subject matter experts to meetings as appropriate.
- Planning stakeholders participating in external mitigation-related initiatives should bring back mitigation ideas, strategies, projects, funding opportunities, and other related information to the planning stakeholders' meetings or share directly with Jones County Emergency Management Agency to distribute to the planning stakeholders during the months or years between meetings.

As part of this coordination, the Jones County Emergency Management Agency and planning stakeholders will also monitor repetitive loss properties, evaluate changes in hazards, vulnerabilities, or the distribution of risk across the planning area, and seek to identify new and ongoing mitigation opportunities.

5.2.2 Evaluation

Evaluating refers to assessing the effectiveness of the Plan in achieving its stated purpose and goals. Evaluation of progress will be completed by monitoring changes in vulnerabilities identified in the Plan, such as:

- Decreased vulnerability because of implementing recommended actions,
- Increased vulnerability because of failed or ineffective mitigation actions, and/or
- Increased vulnerability because of new development (and/or annexation).

The planning stakeholders may meet on an irregular schedule to evaluate the implementation of the Plan and consider any changes in priorities that may be warranted. This evaluation will include investigating whether mitigation actions were completed and assessing how effective those actions were in mitigating losses. A review of mitigation activities' qualitative and quantitative benefits (or avoided losses) will support this assessment. The evaluation results will then be compared to the goals established in the Plan, and decisions will be made regarding whether actions should be discontinued in the Plan. Decisions will be made regarding whether actions should be discontinued or modified in any way, considering new developments in the community. The planning stakeholders will document progress for use in the next plan update. Finally, the planning stakeholders will monitor and incorporate elements of this Plan into other planning mechanisms, as detailed in **Section 5.4**.

Jones County Emergency Management Agency will coordinate and facilitate an effective maintenance and implementation process. Completed projects will be evaluated to determine how they have reduced vulnerability. Changes will be made to the Plan to accommodate for projects that have failed or are not considered feasible after a review for their consistency with established criteria, the time frame, priorities, and/or funding resources.

The planning stakeholders will review progress on an irregular basis in an effort to identify issues needing to be addressed by future plan updates. This review will include the following:

- Summary of any hazard incidents that occurred during the performance period and the impact these incidents had on the planning area.
- Review of mitigation success stories.
- Review of continuing public involvement.
- Brief discussion about why targeted strategies were not completed.
- Re-evaluation of the action plan to evaluate whether the timeline for identified projects needs to be amended (such as changing a long-term project to a short-term one because of new funding).
- Recommendations for new projects.
- Changes in or potential for new funding options (grant opportunities).
- Impact of any other planning programs or initiatives that involve hazard mitigation.

Planning stakeholders are responsible for submitting mitigation action progress reports to the Jones County Emergency Management Agency.

5.2.3 Updates

This Plan will be reviewed and revised at least once every five years following DMA 2000 requirements and the latest FEMA and State of Iowa hazard mitigation planning guidance. The five-year updates to this Plan will consider:

- Has the nature or magnitude of hazards affecting the covered jurisdictions changed?
- Are there new hazards that have the potential to impact the covered area?
- Has growth and development changed the vulnerabilities?
- Has changes to local social vulnerability factors changed the vulnerabilities?
- Do the identified goals and actions still address current and expected conditions?
- Have mitigation actions been implemented or completed?
- Has the implementation of identified mitigation actions resulted in expected outcomes?
- Are current resources adequate to implement the Plan?
- Should additional resources be committed to address identified hazards?

In addition to the five-year revision cycle, the planning stakeholders may meet to update the Plan. Any administrative changes to the Plan may be made by the Jones County Emergency Management Agency at any time and recorded in the Record of Change Section. Administrative changes do not fundamentally alter significant mitigation goals, objectives, actions, or organizational roles and responsibilities. Substantive updates to the Plan will be brought to the planning stakeholders for consideration and acceptance. Any interested party wishing to receive an update on this plan during the update process should submit their request to the Jones County Emergency Management Agency. The Jones County Emergency Management Agency will evaluate all such requests and bring them to the entire planning stakeholders for consideration and discussion if needed.

The Jones County Emergency Management Agency will reconvene the planning stakeholder members and entities identified in **Section 1** for this process. The updated plan will document which mitigation actions were progressed and areas where mitigation actions were ineffective. It will include re-adoption by all participating entities following State of Iowa/FEMA approval.



5.3 Continued Public Involvement

Element Addressed in Section
Element D1. Is there discussion of how each community will continue public participation in the plan maintenance process? (Requirement 44 CFR § 201.6(c)(4)(iii)), including requirement D1-a .

The update provides an opportunity to publicize success stories from the plan’s implementation and seek additional public comment. Information about plan reviews will be posted on social media and the websites of covered jurisdictions. When the planning stakeholders reconvene for the update, it will coordinate with all stakeholders participating in the planning process, including those who joined the committee after the initial effort to update and revise the Plan.

The current Plan is available for in-person or digital review requests by contacting the Jones County Emergency Management Agency.

Jones County Emergency Management Agency conducts and participates in numerous public engagement events and activities throughout the Plan’s life cycle. These allow the public to be engaged and ask questions about the mitigation process and how to increase personal and family resilience.

5.4 Incorporation into Existing Planning Mechanisms

Element Addressed in Section
Element D3. Does the plan describe a process by which each community will integrate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, when appropriate? (Requirement 44 CFR § 201.6(c)(4)(ii)), including requirement D3-a, D3-b, and D3-c .

Another essential implementation mechanism that is highly effective and low cost is the incorporation of the Plan’s recommendations and their underlying principles into other existing or new jurisdiction plans and mechanisms. Mitigation is most successful when it is incorporated into the day-to-day functions and priorities of government and development.

The planning stakeholders have existing policies, plans and programs that contribute to reducing losses to life and property from natural hazards. This Plan builds upon the momentum developed through previous and related planning efforts and recommends implementing projects, where possible, through these other program mechanisms.

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Planning processes and programs, coordinated with the recommendations of this Plan, may include the following:

- Municipal codes
- Community design guidelines
- Water-efficient landscape design guidelines
- Stormwater management programs
- Water system vulnerability assessments
- Community wildland fire protection plans
- Floodplain maps or floodplain regulations
- Comprehensive plan updates
- Ordinances
- Building or fire codes
- Administrative Policies
- Emergency Operations Plans
- School Plans

Additional clarification on which jurisdictions have these are outlined in **Section 2.9**.

Schools can implement local mitigation plans into their own plans by integrating hazard-specific guidance and resilience strategies to address shared risks. For example, incorporating hazard assessments from the local mitigation plan into their Emergency Operations Plan (EOP) allows schools to develop tailored evacuation routes or designate shelter locations outside flood-prone areas. In their Continuity of Operations Plan (COOP), schools can address vulnerabilities identified in the local plan, such as preparing backup power systems for frequent outages. Transportation plans can use data from the local plan to create safer bus routes, avoiding roads and bridges susceptible to hazards like flooding or winter storms. Capital improvement and facility maintenance plans can prioritize structural resilience measures, such as installing tornado-safe rooms or ensuring compliance with seismic standards. Additionally, hazard-specific plans, such as wildfire evacuation protocols, and crisis communication strategies can be aligned with the local emergency management framework for consistent messaging. By embedding these elements into their existing plans, schools can enhance their preparedness, protect students and staff, and contribute to broader community resilience.

Planning stakeholders involved in updating these existing planning mechanisms will be responsible for integrating the findings and actions of the mitigation plan, as appropriate.

Section 5: Plan Implementation & Maintenance



APPENDIX A: PLANNING PROCESS DOCUMENTATION



APPENDIX A: PLANNING PROCESS DOCUMENTATION

Submitted a Stakeholder Agreement

Date submitted 	Which jurisdiction do you represent? 
2024-02-02 11:28:30	City of Monticello
2024-01-30 11:24:49	Jones County
2024-01-29 15:18:31	City of Wyoming
2024-01-29 09:08:52	Sacred Heart Catholic School
2024-01-28 19:19:44	St. Patrick School
2024-01-28 12:55:20	Jones County
2024-01-21 20:22:37	City of Cascade
2024-01-19 09:27:17	City of Morley
2024-01-15 13:05:17	Jones County
2024-01-15 12:51:13	City of Monticello
2024-01-15 12:10:54	City of Olin
2024-01-15 11:29:45	Jones County
2024-01-15 11:00:25	City of Onslow
2024-01-15 10:58:22	Monticello Community School District

Submitted a Hazard Ranking Assessment



Date submitted ▴ ▾	Which jurisdiction do you represent? ▴ ▾
2024-02-06 18:27:46	Midland Community School District
2024-02-05 08:06:42	Jones County
2024-02-02 11:33:30	City of Monticello
2024-01-30 11:21:49	Jones County
2024-01-29 15:13:19	City of Wyoming
2024-01-29 10:35:18	Sacred Heart Catholic School
2024-01-28 19:13:27	Jones County
2024-01-28 12:52:58	Jones County
2024-01-21 20:27:52	City of Cascade
2024-01-19 09:22:06	City of Morley
2024-01-15 13:10:07	Jones County
2024-01-15 12:35:36	City of Monticello
2024-01-15 12:17:13	City of Olin
2024-01-15 11:50:08	Jones County
2024-01-15 11:10:22	Monticello Community School District
2024-01-15 10:56:53	City of Onslow

Submitted a Mitigation Action Review



Date submitted ⚙	Which jurisdiction do you represent? ⚙	Name of School District ⚙
2024-07-30 11:36:14	School District	Sacred Heart Grade School
2024-07-29 11:15:14	City of Cascade	
2024-07-28 09:03:28	School District	St.Patrick
2024-07-17 11:07:39	School District	Olin CSD
2024-07-10 17:42:31	School District	Monticello Community School District
2024-07-10 15:42:53	City of Anamosa	
2024-06-11 11:10:45	City of Morley	
2024-06-07 09:34:35	City of Wyoming	
2024-06-04 11:49:02	City of Monticello	
2024-06-04 09:22:48	School District	Anamosa
2024-06-04 08:24:26	City of Martelle	
2024-06-03 19:15:35	School District	Midland
2024-06-03 12:26:09	City of Oxford Junction	
2024-05-30 09:16:54	Jones County	
2024-05-22 11:03:39	City of Olin	
2024-05-09 06:24:09	City of Onslow	



Date submitted ⌵	Which jurisdiction do you represent? ⌵	Name of School District ⌵
2024-09-05 07:59:09	City of Wyoming	
2024-09-03 13:18:48	City of Cascade	
2024-09-03 09:44:15	City of Monticello	
2024-08-16 16:44:39	City of Anamosa	
2024-08-06 09:45:18	City of Morley	
2024-08-05 16:12:32	School District	Midland CSD
2024-07-30 12:39:19	School District	Sacred Heart Grade School
2024-07-29 15:29:27	City of Olin	
2024-07-29 11:05:05	Jones County	

Submitted a Capabilities Assessment



Date submitted ↕	Which jurisdiction do you represent? ↕	Name of School District ↕
2024-10-23 15:45:47	City of Wyoming	
2024-10-18 12:15:58	City of Martelle	
2024-10-03 12:48:57	City of Oxford Junction	
2024-09-30 10:54:29	School District	Midland Community School District
2024-09-30 09:14:28	School District	Olin Community School District
2024-09-30 08:35:46	School District	Olin Community School District
2024-09-05 10:48:00	School District	St. Patrick School
2024-08-30 09:09:18	City of Morley	
2024-08-27 10:33:25	City of Anamosa	
2024-08-12 10:41:37	School District	Sacred Heart Grade School
2024-08-09 14:49:53	City of Monticello	
2024-08-07 11:53:36	City of Onslow	
2024-08-07 10:25:15	Jones County	
2024-08-06 10:10:20	City of Olin	



APPENDIX B:

PUBLIC OUTRACH

DOCUMENTATION



APPENDIX B: PUBLIC OUTREACH DOCUMENTATION



Jones County Iowa Emergency Management
2m · 🌐

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✕

Please take a few minutes to help Jones County update their Hazard Mitigation Plan. Link to the survey is below.

This survey is to provide your thoughts and experiences related to natural and human-caused hazards in Jones County. Your feedback is greatly appreciated and will be used to support the update to Jones County's Multijurisdictional Hazard Mitigation Plan. With community participation such as yours, this plan shall help to minimize the impact of future major disaster... See more



JONES COUNTY · IOWA



TWORIVERSEM.FORMSTACK.COM

Jones County, IA HMP Update Public Participation Survey - Formstack

Thank you for your interest in participating in this survey to provide your thoughts and experie...

 Boost this post to reach up to 862 more people daily if you spend \$14.

Boost post

 Like

 Comment

 Share





RESOLUTION NO. 2025-50

**RESOLUTION TO APPROVE AND ADOPT THE MULT-JURISDICTIONAL HAZARD MITIGATION PLAN,
AS MAINTAINED BY JONES COUNTY EMERGENCY MANAGEMENT.**

WHEREAS, the Anamosa City Council has deemed it necessary to have a Hazard Mitigation Plan that identifies potential hazards and mitigation efforts to reduce and/or eliminate risks associated with such hazards; and,

WHEREAS, local jurisdictions that elect to participate in FEMA hazard mitigation programs are required to have a local hazard mitigation plan, in accordance with FEMA's Local Mitigation Planning Policy Guide 2023 and Title 44 of the Code of Federal Regulations (CFR); and,

WHEREAS, the Jones County Multi-Jurisdictional Hazard Mitigation Plan is maintained by Jones County Emergency Management, in collaboration with multiple public organizations within Jones County; and,

WHEREAS, the Jones County Multi-Jurisdictional Hazard Mitigation Plan requires approval and adoption, by the governing bodies of each local jurisdiction.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF ANAMOSA, IOWA, that the City of Anamosa City Council does hereby approve and adopt the Multi-Jurisdictional Hazard Mitigation Plan for Jones County, Iowa.

Councilmember _____ introduced this Resolution and moved for its adoption.

Councilmember _____ seconded the motion to adopt.

The roll was called and the following indicates the result of the vote.

COUNCIL MEMBER	AYES	NAYS	ABSENT	ABSTAIN
CRUMP				
K. SMITH				
TUETKEN				
D. SMITH				
WEIMER				
GOMBERT				

PASSED AND APPROVED this 11th day of August, 2025.

ROD SMITH, MAYOR

ATTEST:

JEREMIAH HOYT, CITY ADMINISTRATOR

THE JOINT COUNTY EMERGENCY RESPONSE TEAM AGREEMENT

This agreement is made pursuant to Chapter 28E, Code of Iowa. It shall be known as the Joint County Emergency Response Team Agreement and shall include law enforcement for the following under sanction by resolution of their respective city council or county board, with those being: Jones County, Delaware County, Anamosa, Monticello, Cascade and Manchester, Iowa. The purpose of said Agreement is to establish a working mechanism among law enforcement who may call upon other members for the Joint County Emergency Response Team.

Pursuant to said purpose it is agreed as follows:

1. Purpose

The parties shall, subject to this Agreement, participate in providing a cooperative law enforcement unit to be known as the Joint County Emergency Response Team (JCERT). This unit will be available, when called upon as provided in this Agreement, to provide assistance to the law enforcement agencies of the parties in high risk law enforcement operations including, but not limited to, situations involving school violence, hostages, barricaded subjects, organized or unorganized civil disobedience or mass disturbance, mentally ill subjects, search and arrest warrant executions and any other law enforcement efforts in which there is a significant potential for violence.

2. Nature and Administration

This Agreement shall not create a separate legal entity. The JCERT unit shall be a cooperative administrative agency under the control of the executives from each participating agency, known as the Executive Board. The agency executives shall administer this Agreement and all funds made available for JCERT unit purposes, and shall adopt rules and regulations governing its command structure and the appointment, training, and dismissal of individual JCERT unit members.

3. Financing and Budget

The Executive Board will consist of: The Jones County Sheriff, Delaware County Sheriff, Anamosa Police Chief, Monticello Police Chief, Cascade Police Chief, and Manchester Police Chief. The Executive Board shall establish and administer an operating budget every fiscal year, along with an initial "buy-in" for each agency to be determined by said board. The monies will be placed in an operation account for the JCERT unit. The account shall be maintained by any participating agency as determined by majority vote of the Executive Board. No fees or assessments will be imposed, nor monies spent without the majority consent of the Executive Board.

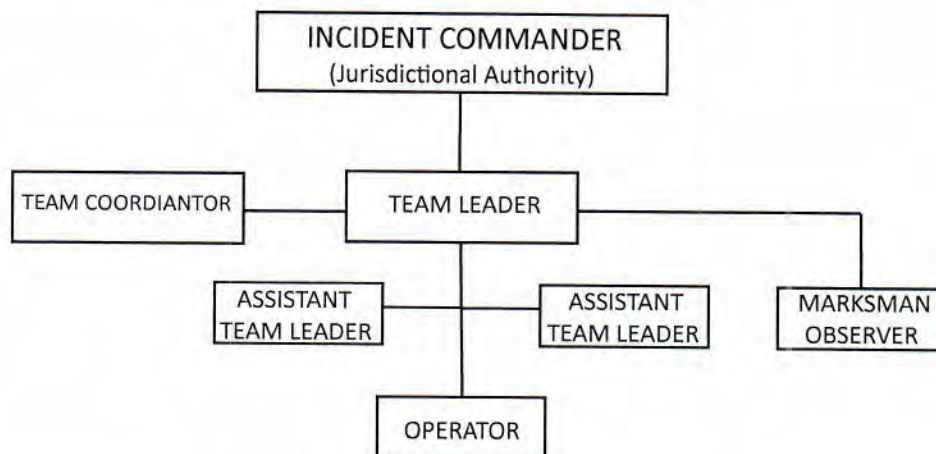
4. Equipment

All equipment provided with the JCERT funds shall be joint property of the participating agencies. All equipment provided for the individual members of the JCERT unit by their respective law enforcement agencies may be utilized for JCERT purposes, but shall remain the property of those individual law enforcement agencies. In the event an agency withdraws participation with the unit, joint property will be bought out by the remaining balance of the Executive Board.

5. JCERT Unit Membership

In order to be eligible for selection as a JCERT unit member and individual must be employed on a full-time basis as an Iowa Law Enforcement Academy certified peace officer by one of the parties to this Agreement, have the approval of the head of their law enforcement agency and satisfy other selection criteria as established by the JCERT unit. Individual members may be removed or suspended at any time by the head of the individual's law enforcement agency upon written request and justification by the team leader.

6. JCERT Team Composition and Structure



7. Assistance Calls

Request for assistance from the JCERT unit shall be made by the highest ranking on-duty officer of the law enforcement agency requesting assistance. If possible, the head law enforcement official for the officer/agency requesting response, will be notified immediately and solidify the request. The decision whether to deploy the JCERT unit in response shall be made by the Incident Commander or the highest-ranking available officer of the JCERT unit. When assistance by the JCERT unit is provided under this

Agreement, overall command responsibility for the law enforcement activity shall be the responsibility of the Incident Commander or the highest-ranking officer of the JCERT unit on the scene, and shall assume command responsibilities. However, tactical decisions involving the use of JCERT unit members must be made by or have approval of the team leader or next highest ranking JCERT unit member at the scene.

8. Law Enforcement Authority

Individual members of the JCERT unit, while providing assistance to any law enforcement agency under the terms of this Agreement, shall have the same powers and authority as members of the assisted law enforcement agency.

9. Withholding Assistance

Each individual JCERT unit member called upon to serve in a law enforcement activity under the terms of this Agreement shall notify their law enforcement agency at the earliest possible time. The senior officer of the law enforcement agency shall have the right to withhold the JCERT unit member from service in a particular operation or to require the return of the JCERT unit member, if in the judgement of such senior officer at that time will deprive the officer's home jurisdiction of essential law enforcement protection.

10. Liability

All wages and disability payments, pension, workers' compensation claims and benefits, damage to equipment and clothing, and medical expenses and any and all other claims of law enforcement personnel and any and all benefits in connection with duties outside the jurisdiction in accordance with the terms of this Agreement shall be the responsibility of the governmental agency regularly employing such law enforcement personnel and said government agencies shall hold the other governmental agencies harmless from any and all claims made by their law enforcement personnel in connection with duties outside the jurisdiction in accordance with the terms of this Agreement.

It is further expressly agreed that all law enforcement personnel rendering aid outside their jurisdiction pursuant to this Agreement shall be performing duties arising out of and in the course of their employment with their governmental agency employing such law enforcement personnel.

11. Effective Date and Duration

This Agreement shall be effective upon its approval and execution by all parties identified above the filing of this agreement with the Iowa Secretary of State and the

Jones County Recorder. The duration of this agreement shall be continuous until terminated as hereafter provided.

12. Termination

The head of any participating law enforcement agency may terminate their participation in this Agreement by providing a written letter of intent to terminate participation in said Agreement. A copy of this letter shall be forwarded to the participating cities and all participating law enforcement agency heads. Upon receipt of such letter of intent to terminate participation in this Agreement by all parties, the terminating agency shall be considered to be withdrawn from the Agreement. This Agreement shall be subject to amendment by a majority vote of the participating law enforcement agency executives. Termination or amendment to this Agreement shall be filed with the Iowa Secretary of State and the Jones and Delaware County Recorder.

COUNTY OF JONES

Chairman, Board of Supervisors

Auditor

Dated

CITY OF ANAMOSA

Mayor

City Clerk

Dated

CITY OF CASCADE

COUNTY OF DELAWARE

Chairman, Board of Supervisors

Auditor

Dated

CITY OF MONTICELLO

Steve E. Pearl
Mayor

Sally Hemmichsen
City Clerk

7-28-2025
Dated

CITY OF MANCHESTER

Mayor

City Clerk

Dated

Mayor

City Clerk

Dated



Date

7/9/2025

Attn: Shane Brown

Re: Tree Grinding for City of Anamosa

Dear Sir:

Quote is based on the plans prepared by

Our quote includes the following:

Item Nun Description	Quantity	UM	Unit Bid Price	Total Bid Price
Tree Grinding	1	P/Hour	\$ 430.00	\$ 430.00
Mobilization	1	LS	\$ 1,200.00	\$ 1,200.00

The following clarifications apply to our quote:

- 1 Proposal is based on existing site conditions at the time of bid.
- 2 A storm water discharge plan was not included

- 5 No Certified Plant Inspection
6 Grade to be within a tenth
7 A single mobilization has been priced, every mob after the first will be \$5,000.00 per mob
8 Excess grading will be done by T & M as needed.
9 No erosion controls
10 No traffic control (if needed would be performed on a time and material basis)
11 No seeding, sodding or mulching (but could be priced)
13 No core out (if needed would be performed on a time and material basis)
15 No locating, adjustment or relocation of conflicting utilities
16 No testing, Soil, density, concrete, etc.
17 No geotechnical engineering or QC staff
18 No surveying .
19 No permits or fees
20 No temporary parking or pedestrian walkways
21 No modular fencing included
22 No rock, frost or hazardous waste removal
23 No removal or replacement of unsuitable soils. This will be done on a unit price basis.
24 No landscape or permanent seeding
25 No hand demolition of existing structures
26 No soil treatment
27 No engineering drawing for the "As Built Drawings" that may be required at the end of job.
29 No winter condition costs including things as heated water in the concrete, blankets, heating or forms, Etc.
30 No Bond

Materials are guaranteed as specified. All work to be completed in a workman like manner according to standard practices, local and state codes. All work requested beyond these specified will be considered extras. All extra costs will be negotiated prior to starting the work or, charged on a time and materials basis. All extra costs will be compensated with or without an executed signed document. Upon acceptance of this pricing, contractor shall be furnished the location of all underground pipes, transmission lines and utilities near the vicinity of work to be performed.

Thank you for your considerations. We look forward to working with you on this project.

Boomerang Corp



Matt Bockenstedt

Estimator

(319) 462-4435 office

mattb@boomerangcorp.com

(319) 462-0644 CELL

Shane Brown

From: Dan Scofield <DScofield@rathjeconstruction.com>
Sent: Monday, August 4, 2025 1:54 PM
To: Shane Brown
Subject: FW: Anamosa Tree Grinding

Shane,

Here is the quote for tree grinding.

Thanks!

From: Dan Scofield <DScofield@rathjeconstruction.com>
Sent: Monday, August 4, 2025 1:41 PM
To: Dan Scofield <DScofield@rathjeconstruction.com>
Subject: Anamosa

Tree grinder with hoe \$675 hr. Last year was \$630 increase of \$45 hr.
Mobilization will be the same @ \$400.

Optional: semi w/75 CY demo trailer \$185 hr to haul mulch away. Standard tandem dump truck will do about 15 CY

Get [Outlook for iOS](#)

\$1,300 2 Hour minimum

\$650.00 Hour

~~10~~ T3W

Grinding



Please Remit To:
HR Green, Inc.
PO Box 8213
Des Moines, IA 50301-8213
319-841-4000

Steve Agnitsch
City of Anamosa, IA
107 S Ford Street
Anamosa, IA 52205-1841

July 24, 2025
Project No: 2202515-0000
Invoice No: 190582
Invoice Total: \$2,500.00

Project 2202515-0000 Anamosa, IA - WTP Aerator Equipment Replacement
Water Treatment Plant Aerator Replacement
Design and Bid Phase Services

Send Invoice to Jeremiah Hoyt at jeremiah.hoyt@anamosa-ia.org and copy Kaylee Palmer at kaylee.palmer@anamosa-ia.org

Professional Services Through July 11, 2025

Phase 01 WTP Aerator Equipment Replacement

Fee				
Total Fee	26,500.00			
Percent Complete	84.9057	Total Earned	22,500.02	
		Previous Fee Billing	20,000.02	
		Current Fee Billing	2,500.00	
		Total Fee		2,500.00
Billing Limits		Current	Prior	To-Date
Total Billings		2,500.00	20,000.02	22,500.02
Limit				26,500.00
Remaining				3,999.98
		Total this Phase		\$2,500.00
		Total this Invoice		\$2,500.00



Please Remit To:
HR Green, Inc.
PO Box 8213
Des Moines, IA 50301-8213
319-841-4000

Jeremiah Hoyt
City of Anamosa, IA
107 S Ford Street
Anamosa, IA 52205-1841

July 24, 2025
Project No: 220409.01
Invoice No: 190583
Invoice Total: \$1,699.98

Project 220409.01 Anamosa, IA - WTP Disinfection System CPS
Water Treatment Plant
Hypochlorite Improvements - CPS

Send Invoice to Jeremiah Hoyt at jeremiah.hoyt@anamosa-ia.org and copy Kaylee Palmer at kaylee.palmer@anamosa-ia.org

Professional Services Through July 18, 2025

Fee

Total Fee	19,100.00		
Percent Complete	100.00	Total Earned	19,100.00
		Previous Fee Billing	17,400.02
		Current Fee Billing	1,699.98
		Total Fee	1,699.98

Billing Limits

	Current	Prior	To-Date
Total Billings	1,699.98	17,400.02	19,100.00
Limit			19,100.00

Total this Invoice **\$1,699.98**



Please Remit To:
HR Green, Inc.
PO Box 8213
Des Moines, IA 50301-8213
319-841-4000

Jeremiah Hoyt
City of Anamosa, IA
107 S Ford Street
Anamosa, IA 52205-1841

July 25, 2025
Project No: 220501
Invoice No: 190736
Invoice Total: \$150.50

Project 220501 Anamosa, IA - Sidewalk Program
Anamosa - 2022 Sidewalk Program, includes Amendment 1

Services provided this month include:

1. Coordination with Tiger Eye and GIS to begin work on Amendment 01.

Send Invoice to Jeremiah Hoyt at jeremiah.hoyt@anamosa-ia.org and copy Kaylee Palmer at kaylee.palmer@anamosa-ia.org

Professional Services Through July 18, 2025

Phase 1 Program Management and Administration

Professional Personnel

	Hours	Amount	
Administrative	.50	39.50	
Junior Professional	.75	103.50	
Totals	1.25	143.00	
Total Labor			143.00

Unit Charges

Technology & Communication Charge	7.50	
Total Unit Charges	7.50	7.50

Total this Phase \$150.50

Billing Limits

	Current	Prior	To-Date
Total Billings	150.50	18,165.50	18,316.00
Limit			48,800.00
Remaining			30,484.00

Total this Invoice \$150.50



Please Remit To:
HR Green, Inc.
PO Box 8213
Des Moines, IA 50301-8213
319-841-4000

Jeremiah Hoyt
City of Anamosa, IA
107 S Ford Street
Anamosa, IA 52205-1841

July 25, 2025
Project No: 2303719-0000
Invoice No: 190738

Invoice Total: \$412.50

Project 2303719-0000 Anamosa, IA - Dillion Military Bridge - Ownership & Funding Alternatives
Study
Anamosa, IA Dillion Military (Cemetery) Road Bridge
Inspection and Relocation Concept Analysis

Services provided this month include:

1. Funding coordination with ECICOG & coordination of meeting to discuss funding package plan.
2. Review of State Rec Trails Funding Application requirements and coordinate with the City.
3. Coordination with the City and City Attorney to review proposed Jone County agreement

Send Invoice to Jeremiah Hoyt at jeremiah.hoyt@anamosa-ia.org and copy Kaylee Palmer at kaylee.palmer@anamosa-ia.org

Professional Services Through July 18, 2025

Phase A Project Management

Professional Personnel

	Hours	Amount	
Junior Professional	.75	108.00	
Totals	.75	108.00	
Total Labor			108.00

Unit Charges

Technology & Communication Charge	4.50	
Total Unit Charges	4.50	4.50

Total this Phase \$112.50

Phase B Bridge Analysis

Professional Personnel

	Hours	Amount	
Junior Professional	.75	108.00	
Totals	.75	108.00	
Total Labor			108.00

Unit Charges

Technology & Communication Charge	4.50	
Total Unit Charges	4.50	4.50

Total this Phase \$112.50

Phase D Permitting and Utility Needs

Project	2303719-0000	Anamosa, IA - Military Bridge - Funding	Invoice	190738
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Professional Personnel

	Hours	Amount	
Junior Professional	1.25	180.00	
Totals	1.25	180.00	
Total Labor			180.00

Unit Charges

Technology & Communication Charge	7.50	
Total Unit Charges	7.50	7.50

Total this Phase \$187.50

Billing Limits

	Current	Prior	To-Date
Total Billings	412.50	59,461.74	59,874.24
Limit			81,354.90
Remaining			21,480.66
Total this Invoice			<u>\$412.50</u>



Please Remit To:
HR Green, Inc.
PO Box 8213
Des Moines, IA 50301-8213
319-841-4000

Jeremiah Hoyt
City of Anamosa, IA
107 S Ford Street
Anamosa, IA 52205-1841

July 25, 2025
Project No: 2303835-0000
Invoice No: 190739

Invoice Total: \$1,798.50

Project 2303835-0000 Anamosa, IA - Engineering Services Master Service Agreement
Master Agreement for Municipal Engineering Services

Services provided this month include:

1. Summary of current and potential projects as discussed with City staff over the past year with request to discuss and establish priorities
2. Project Status Report for 7/14/25 City Council Meeting
3. Qwik Star Site plan coordination for the NE corner of Council Street and IA 64/3rd Street, Traffic Study discussion and follow-up meeting with Iowa DOT
4. Coordination with ECICOG to discuss the ability to pay for consulting fees with grant funding & update 2026 STBG funds available to the City.
5. WWTP Influent loading exceedance assistance

Send Invoice to Jeremiah Hoyt at jeremiah.hoyt@anamosa-ia.org and copy Kaylee Palmer at kaylee.palmer@anamosa-ia.org

Professional Services Through July 18, 2025

Phase 1000 Professional Services

Professional Personnel

	Hours	Amount	
Professional	1.00	250.00	
Junior Professional	7.25	1,044.00	
Totals	8.25	1,294.00	
Total Labor			1,294.00

Unit Charges

Technology & Communication Charge	49.50	
Total Unit Charges	49.50	49.50

Total this Phase \$1,343.50

Phase 2000 2025 DNR Sanitary Survey

Professional Personnel

	Hours	Amount	
Professional	2.00	400.00	
Operators/Interns	.50	40.00	
Totals	2.50	440.00	
Total Labor			440.00

Unit Charges

Technology & Communication Charge	15.00	
Total Unit Charges	15.00	15.00

Project	2303835-0000	Anamosa, IA - Engineering Services (MSA)	Invoice	190739
Total this Phase			\$455.00	
Total this Invoice			<u>\$1,798.50</u>	



Please Remit To:
HR Green, Inc.
PO Box 8213
Des Moines, IA 50301-8213
319-841-4000

Jeremiah Hoyt
City of Anamosa, IA
107 S Ford Street
Anamosa, IA 52205-1841

July 25, 2025
Project No: 2403650-0000
Invoice No: 190742

Invoice Total: \$17,835.75

Project 2403650-0000 Anamosa, IA - 3rd Street Sidewalk Extension Final Design & Construction Administration

Project: 3rd Street Sidewalk Extension
Final Design & Construction Administration

Services provided this month include:

1. Project Management
2. Geometric, Staking & Jointing Sheets
3. Traffic Signal and Rapid Flashing Pedestrian Beacon Design, Pavement Striping
4. Sidewalk Sheets
5. NEPA & SHPO Coordination with the DOT, modifications to exhibits & additional coordination with new staffing.
6. Continued development of Check Plans

Send Invoice to Jeremiah Hoyt at jeremiah.hoyt@anamosa-ia.org and copy Kaylee Palmer at kaylee.palmer@anamosa-ia.org

Professional Services Through July 18, 2025

Phase A Project Management & Administration

Professional Personnel

	Hours	Amount	
Junior Professional	.25	36.00	
Totals	.25	36.00	
Total Labor			36.00

Unit Charges

Technology & Communication Charge	1.50	
Total Unit Charges	1.50	1.50

Total this Phase \$37.50

Phase F Final Design - Check (90%) & Final Plan (100%) Preparation

Professional Personnel

	Hours	Amount	
Junior Professional	81.50	11,287.50	
Operators/Interns	54.25	5,696.25	
Totals	135.75	16,983.75	
Total Labor			16,983.75

Unit Charges

Technology & Communication Charge	814.50	
Total Unit Charges	814.50	814.50

Total this Phase \$17,798.25

Project	2403650-0000	Anamosa, IA - 3rd St Final Design & CA	Invoice	190742
Billing Limits		Current	Prior	To-Date
Total Billings		17,835.75	75,952.21	93,787.96
Limit				248,145.00
Remaining				154,357.04
			Total this Invoice	<u>\$17,835.75</u>



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INVOICE FOR PROFESSIONAL SERVICES

July 22, 2025

City of Anamosa, Iowa
107 South Ford Street
Anamosa, IA 52205

Invoice No: 119.1164.08 - 31

Project 119.1164.08 WWTP Flow Equalization Basin

Professional Services through June 30, 2025

Basic Services

Lump Sum Fees

Total Lump Sum Fees	102,600.00			
Percent Complete	100.00	Total Earned	102,600.00	
		Previous Fee Billing	102,600.00	
		Current Fee Billing	0.00	
		Total Lump Sum Fees		0.00
		Phase Subtotal		0.00

	Total	Prior	Current
Billings to Date	102,600.00	102,600.00	0.00

Additional Services

Bidding Services

Billing Limits

	Current	Prior	To-Date	
Total Billings	0.00	5,000.00	5,000.00	
Limit			5,000.00	
		Task Subtotal		0.00
	Total	Prior	Current	
Billings to Date	5,000.00	5,000.00	0.00	
		Phase Subtotal		0.00

Construction Services

Lump Sum Fees

	Contract Amount	% Compl	Total Billed to Date	Previous Billed	Current Billed
Construction Admin	40,000.00	90.00	36,000.00	34,000.00	2,000.00
Construction Staking	6,500.00	100.00	6,500.00	6,500.00	0.00
Total Fee	46,500.00		42,500.00	40,500.00	2,000.00
		Total Lump Sum Fees			2,000.00
		Phase Subtotal			\$2,000.00
	Total	Prior	Current		

REMIT TO: SNYDER & ASSOCIATES, INC.
Mailing: PO Box 1159 | Ankeny, IA 50021
Physical: 2727 SW Snyder Blvd. | Ankeny IA 50023

p: 888-964-2020 | f: 515-964-7938
Federal E.I.N. 42-1379015
SNYDER-ASSOCIATES.COM

Project	119.1164.08	Anamosa-VWTPFlowEqualizationBasin	Invoice	31
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Billings to Date	42,500.00	40,500.00	2,000.00
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Construction Obs

Construction Obs

Hourly Services

	Hours	Rate	Amount	
Engineer VII	4.00	187.00	748.00	
Engineer I	36.00	115.00	4,140.00	
Technician VII	25.00	124.00	3,100.00	
Technician II	39.00	75.00	2,925.00	
Total Services	104.00		10,913.00	10,913.00

Fleet Mileage				363.30
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Billing Limits	Current	Prior	To-Date	
Total Billings	11,276.30	23,007.70	34,284.00	
Limit			86,000.00	
Remaining			51,716.00	
			Task Subtotal	\$11,276.30

	Total	Prior	Current	
Billings to Date	34,284.00	23,007.70	11,276.30	
			Phase Subtotal	\$11,276.30

Amount Due this Invoice \$13,276.30

	Total	Prior	Current
Billings to Date	187,293.50	174,017.20	13,276.30

Thank you. We appreciate the opportunity to serve you.

Accounts Receivable Inquiry: ar@snyder-associates.com

Project Manager: Nicholas Eisenbacher