Systematic Inspection and Maintenance Plan

Systematic Inspection and Maintenance Plan

City of Buffalo

Buffalo Municipal Light and Power

Updated April, 2023

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SECTION I

INTRODUCTION

Iowa law states that each municipal electric utility shall adopt and electronically file with the Iowa Utilities Board (IUB) a reliability plan annually. [199 IAC 27.10(3)(g)]. Further each municipal electric utility must adopt and file a written plan for inspecting and maintaining their electric supply lines and substations (excluding generating stations). [199 IAC 25.3].

In order to comply with these requirements and to assist municipal electric utilities in determining the necessity for replacement, maintenance, and repair, and the necessity for tree trimming or other vegetation management, Buffalo Municipal Light and Power has prepared the following Model Electric Transmission and Distribution Inspection Program.

ADOPTING AND FILING A REVISED PLAN

If you decide to replace your current inspection and maintenance plan, the new plan should be adopted and filed electronically with the IUB. A sample transmittal letters to be included with the filing is shown below.

(City of Utility Letterhead)

Date: File:RE____

Joan Conrad
Records and Information Center
Iowa Utilities Board
1375 E Court Ave
Des Moines, IA 50319-0069

Dear Chief Operating Officer:

In accordance with 199 IAC 27.10(3)(F) and 25.3, the attached electric Utility inspection and maintenance plan has been adopted to replace the plan currently on file.

If you have and questions or need additional information, please let me know.

Sincerely,

Name
Title

ADOPTING AND FILING A REVISED PLAN

According to the practice at your utility, the plan may need to be approved by your utility's board of trustees

or city council. The advantage of involving the governing body in the approval process is to ensure policy-level understanding of the requirements for inspection and related service work on your system.

The City Council shall approve by resolution any updates to the utility inspection and maintenance plan as shown below.

Resolution No. _____

City Council
City of Buffalo
Buffalo Municipal Light and Power

WHEREAS, a plan for systematic inspection and maintenance of the city electric system is necessary to ensure reliable service; and

WHEREAS, a plan is essential in identifying and budgeting for resources sufficient to carry out the inspection, maintenance and repair of the electric system; and

WHEREAS, an electric system inspection and maintenance plan and annual compliance report must be filed with the Iowa Utilities Board;

NOW THEREFORE BE IT RESOLVED BY THE City Council of City of Buffalo, Buffalo Municipal Light and Power :

That the revised Electric Utility Inspection and Maintenance Plan attached to this resolution be approved for filing with the Iowa Utilities Board.

Passed and adopted this ___ day of _____, 20___.

_____

(Mayor or Chairman)

ATTEST:

_____

ELECTRIC TRANSMISSION AND DISTRIBUTION INSPECTION AND MAINTENANCE PLAN

Utility Name: Buffalo Electrical Utility
Address: *329 Dodge Street*
Box 557

Buffalo Iowa, 52728

Phone: 563-381-2226

FIRST YEAR OF PLAN: 2023 (Enter first year of plan —10 year rotation maximum)

This inspection will be done in an approved manner consistent with accepted industry practice.

Records sufficient to show compliance with the program shall be maintained by the utility. Deficiencies found during inspections and testing shall be corrected on a priority basis.

REFERENCE LIST:

Iowa Electrical Safety Code, 199 IAC Chapter 25

National Electrical Safety Code, as adopted by 199 IAC 25.2(1) and modified by 199 IAC 25.2(2)

Lineman's and Cableman's Handbook, as adopted by 199 IAC 25.2(5)b

National Electrical Code, as adopted by 199 IAC 25.2(5)a

ANSI A300 (Part 1) -2001 — Tree, Shrub and Other Woody Plant Maintenance — Standard Practices (Pruning)

199 IAC Sections 20.5, 20.7, and 20.8

Rural Electrification Administration (REA) and Rural Utilities (RUS) 161-3: "Inspection and Maintenance of Distribution Lines"

REA and RUS 173013: "Pole Inspection and Maintenance" (replaces161-4)

REA and RUS 1724E-300:"Substation Inspection and Maintenance" (replaces 65-1)

Location of Offices and Facilities- 199-25.3

Utility Name: Buffalo Municipal Light and Power

Address: 329 Dodge Street
Box 557
Buffalo IA 52728

Phone: 563-381-2226

Location of Inspection Records

Address: 402 3rd Street
Buffalo, Iowa 52728

Description of Electrical Supply Lines Covered by this Plan

Counties: Scott
Township: Buffalo
City: Buffalo

SECTION II

ELECTRIC UTILITY INSPECTION PROGRAM Buffalo Electric Utility

Part I Inspection Schedule

1. Distribution Lines operated below 345 kV

The entire electrical distribution system shall be visually inspected at least once during each 10 year cycle. The inspection shall include, but not be limited to, the following items:

- Pole mounted transformers
- Poles, cross arms and associated hardware
- Disconnect switches, cutouts and arresters
- Insulators
- Conductors (including ground connections)
- Down guys, guy guards and anchors
- Clearances (per NESC 232-1)
- Switchgear and switch cabinets (including seals/locks)

2. Substations and switching stations

Substations and switching stations shall be visually inspected monthly. The inspection shall include, but shall not be limited to, the following items:

- Power transformer
- Voltage regulators
- Oil circuit breakers
- Insulators, busses, connections, arrester and ground wire
- Air break and disconnect switches
- Structures and physical site
- Locks, fences, gates and warning signs

3. Vegetation and tree trimming

Vegetation and trees that may interfere with the safe operation of electric lines, substations, and switching stations shall be visually inspected at least once every 5 years.

Per 199 IAC 25.3(4) the records of vegetation management shall include the date(s) during which the work was conducted. The records shall be kept until two years after the next periodic

inspection or vegetation management action is completed or until all necessary repairs and maintenance are completed, whichever is longer.

The inspection shall include, but shall not be limited to, the following items:

A. Overhead Distribution and Transmission Lines

- Trees growing into lines
- Trees or limbs growing within 10 feet of transmission lines
- Limbs and branches overhanging lines
- Limbs and branches in close proximity to transformers, switches, etc.
- Vegetation around base of pole, down guy or guy guard, grounds
- Removal of dead or dying trees that are not necessarily close but could fall on line or endanger it (Danger Trees)

B. URD Distribution Equipment

- Vegetation in or around pad mount equipment
- Fences in close proximity or blocking cabinet entry.
- Any other obstruction that may interfere with operations

Tree trimming procedures will be based on Chapter 35 of the Lineman's & Cableman's Handbook, and the ANSI A-300 Tree pruning Standard.

Part II Classification of Deficiencies

Deficiencies will be recorded and graded for the purpose of scheduling repair. The grading will be as follows:

Grade 1 - Hazardous Deficiency

This grade is used to describe a condition that could reasonably be expected to endanger life or property. A hazardous deficiency shall be promptly repaired, disconnected or isolated. (See National Electrical Safety Code, Rule 214A5)

Grade 2 - Non-Conforming Deficiency

This grade is used to describe a condition that is not in accordance with local, state, or national codes. Such a deficiency is one that could cause maintenance or operating problems and could become hazardous if not corrected. A non-conforming deficiency shall be scheduled for correction as soon as practical within the work plan. In all cases, they shall be corrected within a six-month period following inspection. (See National Electrical Safety Code, Rule 214A4)

Grade 3 - Engineering Deficiency

This grade is used to describe a condition that poses no danger to life or property. Such a deficiency, when corrected, could improve engineering, design, or safety on the system. An engineering deficiency may be corrected in the routine maintenance or replacement schedule.

Part III Other Inspection

More detailed inspections and testing may be conducted as deemed necessary by the utility.

Additional inspections or patrols will be conducted as soon as possible following damaging storms and as necessary in areas subject to high rates of vandalism.

All inspections will be completed in an approved manner consistent with accepted industry practice.

Part IV Emergency Notice and Repair (199 IAC 42.4)

If emergency repairs or non-routine maintenance need to be performed within a railroad right-of-way, it is important that immediate notification be given to other entities with facilities that may be affected. Each public utility must file with the IUB contact information for emergency notifications 24 hours per day, seven days per week. (*See* 199 IAC 42.4(2))

Part V Records (199 IAC 25.3(4))

Each utility shall keep sufficient records to demonstrate compliance with its inspection and

vegetation management plans.

Part VI Incident Reporting Requirements (199 IAC 27.11)

What to report:

a. Loss of service for more than six hours to 75 percent or more of customers within a municipality service area.
b. Loss of service for more than six hours to significant public health and safety facilities.
c. A major event which involves extensive physical damage to transmission or distribution facilities within a municipal electric utility' s operating area due to unusually severe and abnormal weather or event AND
   - Wind speeds in excess of 90 mph, or
   - One-half inch of ice and wind speeds in excess of 40 mph, or
   - Ten percent of the total customer count is incurring a loss of service exceeding 5 hours
   - 20,000 customers incurring a loss of service for 5 hours or more, or
   - A regional transmission organization declares an energy emergency alert

Any other outage considered significant by the utility such as an event that attracts news media attention, creates unusual damage to utility facilities, utility facilities create unusual damage to adjacent properties, causes loss or problem for high profile public facilities.

Email to: iubdutyofficer@iub.iowa.gov or Phone: 515-745-2332

NOTES

Customer numbers can be based on the last available year-end data as reported to the IUB annually, OR can be based on the best available information.

(This is a summary reference for revised incident reporting rules and does not replace the actual text or meaning of the rules published in the Iowa Administrative Code).

INSTRUCTIONS TO INSPECTORS

The following is an outline of the training and instructions that need to be provided to the utility inspector.

Additional items should be added to the list of inspection items as necessary, including any reference materials.

Purpose: The purpose of the inspection is to determine whether a facility is (1) in compliance with applicable codes and standards, (2) in need of maintenance or corrective action, (3) requires further investigation or (4) is in acceptable condition.

Guidelines and code requirements for conducting inspections can be found in:

1) ANSI A300 (Part I), as suggested by 199 IAC 25.3(5) -- Tree, Shrub, and Other Woody Plant Maintenance – Standard Practices (Pruning)

2) 199 IAC Sections 27.5, 27.7, and 27.8

3) Iowa Electrical Safety Code 199 IAC 25

4) Lineman's and Cableman's Handbook, as adopted by 199 IAC 25.2(5)(b)

5) National Electrical Code, as adopted by 199 IAC 25.2(5)a

6) National Electrical Safety Code, as adopted by 199 IAC 25.2(1) and modified by 199 IAC 25.2(2)

7) RUS 1730-1: "Electric System Operation and Maintenance (O&M)"

8) RUS 1730B-121: "Pole Inspection and Maintenance"

9) RUS 1724E-300: “Design Guide for Rural Substations”

[Note: NEC and NESC are updated periodically and adopted by the IUB approximately every 2- 4 years. Previous editions must be kept for reference purposes.]

Other helpful references may be found in Attachment E. Guidelines similar to those on the following pages are not required to be part of the inspection program but are advised by the IUB to be inclusive for reference in case of a dispute or question that a customer or Utility may have.

TRANSMISSION AND DISTRIBUTION SYSTEM

INSPECTION GUIDELINES

A. Poles
   1. Leaning 2-3 feet or more
   2. Rotting
   3. Splitting
   4. Burns
   5. Insect damage
   6. Mechanical damage
   7. Pole numbers where applicable

B. Metal Structures
   1. Loose structural elements
   2. Oxidation
   3. Footings
   4. Grounding (intended or unintended)

C. Cross arms
   1. Rotting
   2. Splitting
   3. Bracing
   4. Grounding
   5. Pins

D. Hardware
    1. Missing
    2. Loose
    3. Bent, twisted
    4. Burns
    5. Too close to the system ground

E. Insulators and Conductors
    1. Chipped
    2. Broken
    3. Flash over
    4. Firmly attached to insulator
    5. Broken strands
    6. Sag

TRANSMISSION AND DISTRIBUTION SYSTEM

INSPECTION GUIDELINES

(continued)

F. Conductor Clearances
    1. Above ground or water
        a. Open ground
        b. Roads, driveways, parking lots
        c. Railroads
        d. Water
    2. Attached building
    3. Conductor separation
        a. Other conductors or attachments
        b. Communication lines
        c. CATV, fiber optics, etc.
    4. Roofs, walls, windows, metal surfaces
        a. Buildings
        b. Tanks
        c. Towers
        d. Poles (non-utility)
        e. Grain bins
    5. Trees and vegetation

G. Conductors
    1. Broken strands
    2. Burns
    3. Twisted
    4. Ties
    5. DE shoes
    6. Sag
    7. Armor rod
    8. Dampeners
    9. Splices

TRANSMISSION AND DISTRIBUTION SYSTEM

INSPECTION GUIDELINES

(continued)

H. Guys
   1. Insulated or grounded
   2. Markers (including length and color)
   3. Loose or cut
   4. Damaged or broken strands
   5. Condition, location of isolation device
   6. Anchor eye

I. Miscellaneous
   1. Clearances to (fire hydrants, gas storage, roadways)
   2. Climbable towers
   3. Warning signs
   4. Barriers
   5. Material stacked near or under towers
   6. Aircraft warning devices
   7. Equipment not in service that needs to be removed
   8. Obstructions on structures

J. Equipment (including transformers, switches, arrestors, etc.)
   1. Jumpers
   2. Hardware
   3. Grounding
   4. Nests
   5. Accessibility

K. Grounds
   1. Broken or disconnected wires
   2. Loose pole grounds
   3. Exposed ground rods
   4. Wire molding missing or broken

INSPECTION PROGRAM FOR SUBSTATIONS

General Visual Inspection

Substations shall be inspected (monthly / quarterly). Inspection shall include but not be limited to the following items:

A. Power transformers
B. Voltage and voltage regulators
C. Circuit breakers
D. OCRs and oil switches
E. Airbrake and disconnect switches
F. Bypass switches
G. Miscellaneous electrical equipment, insulators, buses and connections, arrestors, capacitors, and overhead ground wires
H. Structures and physical site (i.e. washout under fences, etc.)
I. Locks on switches, enclosures, gates
J. Warning signs (spacing and legible)
K. Ground vegetation
L. Grounding of fences, barbed wire, gates, etc.

Additional inspections will be carried out following damaging storms as necessary.

Annual Inspection of Substations

A comprehensive inspection and testing of each substation shall be made on an annual basis. This inspection will include but not be limited to the following items:

A. Indicating and recording equipment
B. Controls, relays, batteries and chargers
C. Oil tests
D. OCR maintenance
E. Ground connection tests on station, fences, gates (Are ground connections tested on fences, etc.?)
F. Corrosion control

UNDERGROUND DISTRIBUTION SYSTEM

INSPECTION GUIDELINES

A. Equipment (transformers, sectionalizing equipment, switch gears, etc.)
    1. Warning signs (legible)
    2. Locks
    3. Penta bolts
    4. Missing or loose hardware
    5. Tipped or leaning equipment
    6. Grounded

B. Underground
    1. Riser
    2. Grounded (elbows, stress cones, etc.)
    3. Ground rod(s) and connections
    4. Well inserts leaking
    5. Secondary Bushings
    6. Insect, varmint free

VEGETATION & TREE TRIMMING

INSPECTION GUIDELINES

Vegetation and trees that may interfere with the safe operation of electric lines, substations, and switching stations shall be visually inspected at least once every three-five years.

The inspection shall include, but shall not be limited to, the following items:

A. Overhead Distribution and Transmission Lines

1. Trees growing into lines
2. Trees or limbs growing within 10 feet of transmission lines
3. Limbs and branches overhanging lines
4. Limbs and branches in close proximity to transformers, switches, etc.
5. Vegetation around base of pole, guy or guy guard, ground
6. Removal of dead or dying trees that have a potential to fall into lines or endanger it (Danger Trees)

B. URD Distribution Equipment

1. Vegetation in or around pad mount equipment
2. Fences in close proximity or blocking cabinet entry
3. Any other obstruction that may interfere with operations

SAMPLE FIELD INSPECTION FORMS

The following pages are examples of field inspection forms. Iowa Administrative Code does not specify a particular inspection form. The examples included in this model are acceptable and can be photo copied.

Remove any item(s) from the form that does not apply to your system. Also you should add any item(s) not on the list that you have on your system. Feel free to substitute your current field inspection forms.

Inspections must be conducted according to the plan on file with the Iowa Utility Board.

To use the inspection form, place the pole or location number at the top of each column. Then for each item inspected mark an "X" if nothing is wrong. If you find something wrong, fill out the work order and put the work order number in the space with the "X."

Even if deficiencies are repaired on the spot, a work order needs to be filled out. This is to document the actions taken during the inspection.

The important thing is to document your inspections and keep good records.

BUFFALO MUNICIPAL UTILITIES

ELECTRIC UTILITY GENERAL VISUAL INSPECTION PROGRAM

OVERHEAD DISTRIBUTION SYSTEM – MAP NO. _____

ITEMS TO BE INSPECTED	LOCATION OF POLE BY NUMBER									
Hammer Test Pole										
Pole Condition At and Above Ground Line										
Ground Connections										
Condition of Cross Arm										
Condition of Insulator										
Condition of Pole Top Hardware										
Condition of Cutout / Arrestor										
Secondary Connection										
Condition of Pole Transformer										
Condition of Underground Riser										
Condition of O.C.R.										
Guys										
Guy Anchor										
Guy Guards										
Secondary Wire Next Span										
Conductor Wire Next Span										
Conductor Sag Next Span										
Clearance to Structures										
Clearance to Grounds										
Clearance to Trees										
Clearance to Buildings										
Condition of Switching Cabinets										
Condition of Pad Mount Transformer										
Meter Condition										
Seals										
Locks										
Warning Sticker										

INSPECTED BY _____ DATE _____ REVIEWED BY _____ DATE _____

IF SOMETHING NEEDS ATTENTION, FILL OUT WORK ORDER AND PUT WORK ORDER NO. IN BLANK. "X" MEANS NOTHING WRONG FOUND AT TIME OF INSPECTION.

BUFFALO MUNICIPAL UTILITIES

ELECTRIC UTILITY GENERAL VISUAL INSPECTION PROGRAM

SUBSTATIONS – MAP NO. _____

ITEMS TO BE INSPECTED	CIRCUITS			
	#1	#2	#3	#4
POWER TRANSFORMER				
• Appearance				
• Bushing Clean				
• Bushing Good Condition				
• Oil Leaks				
• Auxiliary Cooling				
• Bird Nests				
• Ground Connections				
• Buss Work				
• Buss Connections				
• Arrestors				
• Doors Closed				
VOLTAGE REGULATOR A PHASE				
• Appearance				
• Bushing Clean				
• Bushing Good Condition				
• Oil Leaks				
• Cabinet Weather Tight				
• Indicating Glass Cover				
• Ground Connections				
• Oil Level				
VOLTAGE REGULATOR B PHASE				
• Appearance				
• Bushing Clean				

• Bushing Good Condition				
• Oil Leaks				
• Cabinet Weather Tight				
• Indicating Glass Cover				
• Ground Connections				
• Oil Level				

BUFFALO MUNICIPAL UTILITIES

ELECTRIC UTILITY GENERAL VISUAL INSPECTION PROGRAM

SUBSTATIONS – MAP NO. _____

(continued)

ITEMS TO BE INSPECTED	CIRCUITS			
	#1	#2	#3	#4
VOLTAGE REGULATOR C PHASE				
• Appearance				
• Bushing Clean				
• Bushing Good Condition				
• Oil Leaks				
• Cabinet Weather Tight				
• Indicating Glass Cover				
• Ground Connections				
• Oil Level				
•				
BREAKER				
• Appearance				
• Bushing Clean				
• Bushing Good Condition				
• Oil Leaks				
• Oil Level				
• Cabinet Weather Tight				
• Ground Connections				
• Door Locked and Working				
•				
AIR BREAK SWITCHES				
• Appearance				
• Handle Grounded				
• Insulators Good Condition				
• Switching Mat Grounded				
• Structures Good Condition				

• Structures Grounded				
• Buss Work				
• Buss Connections				
• Arrestors				
• Underground Riser				
•				

BUFFALO MUNICIPAL UTILITIES

ELECTRIC UTILITY GENERAL VISUAL INSPECTION PROGRAM

SUBSTATIONS – MAP NO. _____

(continued)

ITEMS TO BE INSPECTED	CIRCUITS			
	#1	#2	#3	#4
FENCES				
• Grounded				
• Gates Locked and Working				
• Wire Tied to Posts				
• Warning Signs				
• Free of Weeds				
• Child Proof Around Bottom				
•				
YARD				
• Free of Weeds				
• Free of Litter				
• Material Stored Neatly				
• Rock Level				
• Lights All Work				
• Lightning Rod Grounded				
• Border Neat				
•				
STATION POWER TRANSFORMER				
• Appearance				
• Grounded				
• Oil Leaks				
•				

INSPECTED BY _____ DATE _____ REVIEWED BY _____ DATE _____

IF SOMETHING NEEDS ATTENTION, FILL OUT WORK ORDER AND PUT WORK ORDER NO. IN BLANK. "X" MEANS NOTHING WRONG FOUND AT TIME OF INSPECTION.

BUFFALO MUNICIPAL UTILITIES

ELECTRIC UTILITY GENERAL VISUAL INSPECTION PROGRAM

UNDERGROUND DISTRIBUTION SYSTEM – MAP NO. _____

ITEMS TO BE INSPECTED	LOCATION BY NUMBER OF TRANSFORMER, SECONDARY PEDESTAL, HIGH VOLTAGE SWITCH, OR MANHOLE									
Straight on Pad										
Level										
Warning Sticker										
Appearance										
Oil Leaks										
Locked										
Bolt in Lid										
Paint Condition										
Ground Connections										
Concentric Neutral Condition										
Cable Condition										
Elbows On All The Way										
Secondary Connections Tight										
Box Pad Not Filled with Dirt										
Manhole Ground Level										
Manhole Lid Level										
Fault Indicators All Clear										
Fault Indicators Tested										
Condition of Pad Mount Transformer										
Condition of Switching Cabinets										
Meter Condition										
Seals										
Neutral to Soil Test ½ Cell										
Resistance to Ground Test										
Secondary Voltage Reading										

INSPECTED BY _____ DATE _____ REVIEWED BY _____ DATE _____

IF SOMETHING NEEDS ATTENTION FILL OUT WORK ORDER AND PUT WORK ORDER NO. IN BLANK. "X" MEANS NOTHING WRONG FOUND AT TIME OF INSPECTION.

BUFFALO MUNICIPAL UTILITIES

ELECTRIC UTILITY GENERAL VISUAL INSPECTION PROGRAM

TRANSMISSION LINES – MAP NO. _____

ITEMS TO BE INSPECTED	LOCATION OF POLE BY NUMBER									
Hammer Test Pole										
Pole Condition At and Above Ground Line										
Condition of Cross Arm										
Condition of Insulators										
Condition of Pole Top Hardware										
Conductor Condition Next Span										
Conductor Sag Next Span										
Clearance to Structures										
Clearance to Grounds										
Clearance to Trees										
Clearance to Buildings										
Guys										
Guy Anchors										
Guy Guards										
Ground Connections										
Locks										

INSPECTED BY _____ DATE _____ REVIEWED BY _____ DATE _____

IF SOMETHING NEEDS ATTENTION FILL OUT WORK ORDER AND PUT WORK ORDER NO. IN BLANK. "X" MEANS NOTHING WRONG FOUND AT TIME OF INSPECTION.

ATTACHMENT A

SAMPLE INSPECTION SCHEDULES

The following pages are examples of schedules that can be used by your utility. The first page is a month-to-month schedule that illustrates work to be completed during the year. The other inspection schedules can be used for long-term planning.

BUFFALO MUNICIPAL UTILITIES

YEARLY WORK SCHEDULE

JANUARY	FEBRUARY	MARCH
Generate Trim trees	Test Electric Meters Inspect Substations	Generate Pump Out Manholes Inspect Transmission Line
APRIL	MAY	JUNE
Inspect U.R.D. (1 sheet)	Generate Pump Out Manholes Wash & Clean Manholes Inspect U.R.D. (1 sheet)	Inspect Rural Line Take Inventory Inspect U.R.D. (1 sheet)
JULY	AUGUST	SEPTEMBER
Generate Pump Out Manholes	Inspect U.R.D. (1 sheet)	Generate Pump Out Manholes Inspect U.R.D. (1 sheet)

OCTOBER	NOVEMBER	DECEMBER
Inspect Substation Inspect U.R.D. (1 sheet)	Generate Pump Out Manholes Put Up Holiday Lights	Trim Trees Take Down Holiday Lights Take inventory Inspect Transmission Line

Use the blank form on the following page to create a month-to-month schedule for your utility.

BUFFALO MUNICIPAL UTILITIES

YEARLY WORK SCHEDULE

JANUARY	FEBRUARY	MARCH
APRIL	MAY	JUNE
JULY	AUGUST	SEPTEMBER

OCTOBER	NOVEMBER	DECEMBER

TRANSMISSION AND DISTRIBUTION SYSTEM

INSPECTION SCHEDULE

These inspections will be conducted over a _____year period with approximately _____ percent inspected each year. The area to be inspected each year is described in the following schedule. Maps are used to identify the area to be inspected.

YEAR		**DESCRIPTION**
20____	Zone 1	
20____	Zone 2	
20____	Zone 3	
20____	Zone 4	
20____	Zone 5	
20____	Zone 6	
20____	Zone 7	
20____	Zone 8	
20____	Zone 9	
20____	Zone 10	

NOT TO EXCEED 10 YEARS

The current status of this inspection schedule, as it pertains to the specific area (map number), is shown on the next page. If not included here, maps are located _____.

TRANSMISSION AND DISTRIBUTION SYSTEM

INSPECTION SCHEDULE

Key: Indicate the current status by marking the diagram with the appropriate symbol.

□ *-Unscheduled Inspection*

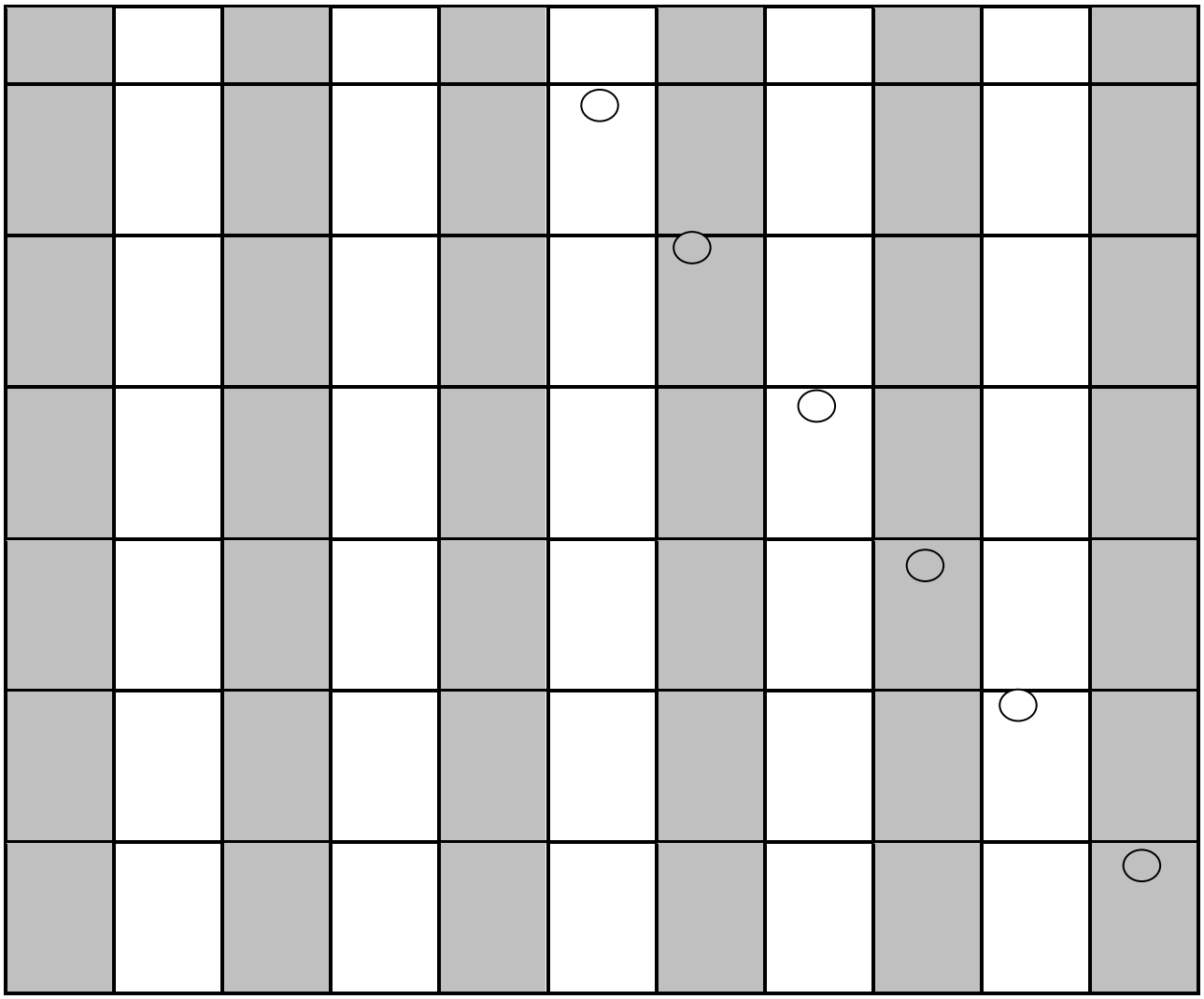
○ *-Area Scheduled for Inspections*

⊘ *-Inspection Completed*

⊗ *-Replacements and Repairs to Correct Deficiencies Completed*

Inspection Schedule and Current Status

Map #	20__	20__	20__	20__	20__	20__	20__	20__	20__	20__
	○									
		○								
			○							
				○						



SUBSTATION

INSPECTION SCHEDULE

Substations are required to be inspected quarterly (monthly recommended) inspection sheets shall be available for inspectors verification.

Substation Name / Location:_____

YEAR		Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
20__	Sub #												
20__	Sub #												
20__	Sub #												
20__	Sub #												
20__	Sub #												
20__	Sub #												
20__	Sub #												
20__	Sub #												
20__	Sub #												

20__	Sub #												

The current status of this inspection schedule, as it pertains to the specific area (map number), is shown on the next page. If not included here, maps are located on page 52.

SUBSTATION INSPECTION SCHEDULE

Key: Indicate the current status by marking the diagram with the appropriate symbol.

□ *-Unscheduled Inspection*

○ *-Area Scheduled for Inspections*

 *-Inspection Completed*

 *-Replacements and Repairs to Correct Deficiencies Completed*

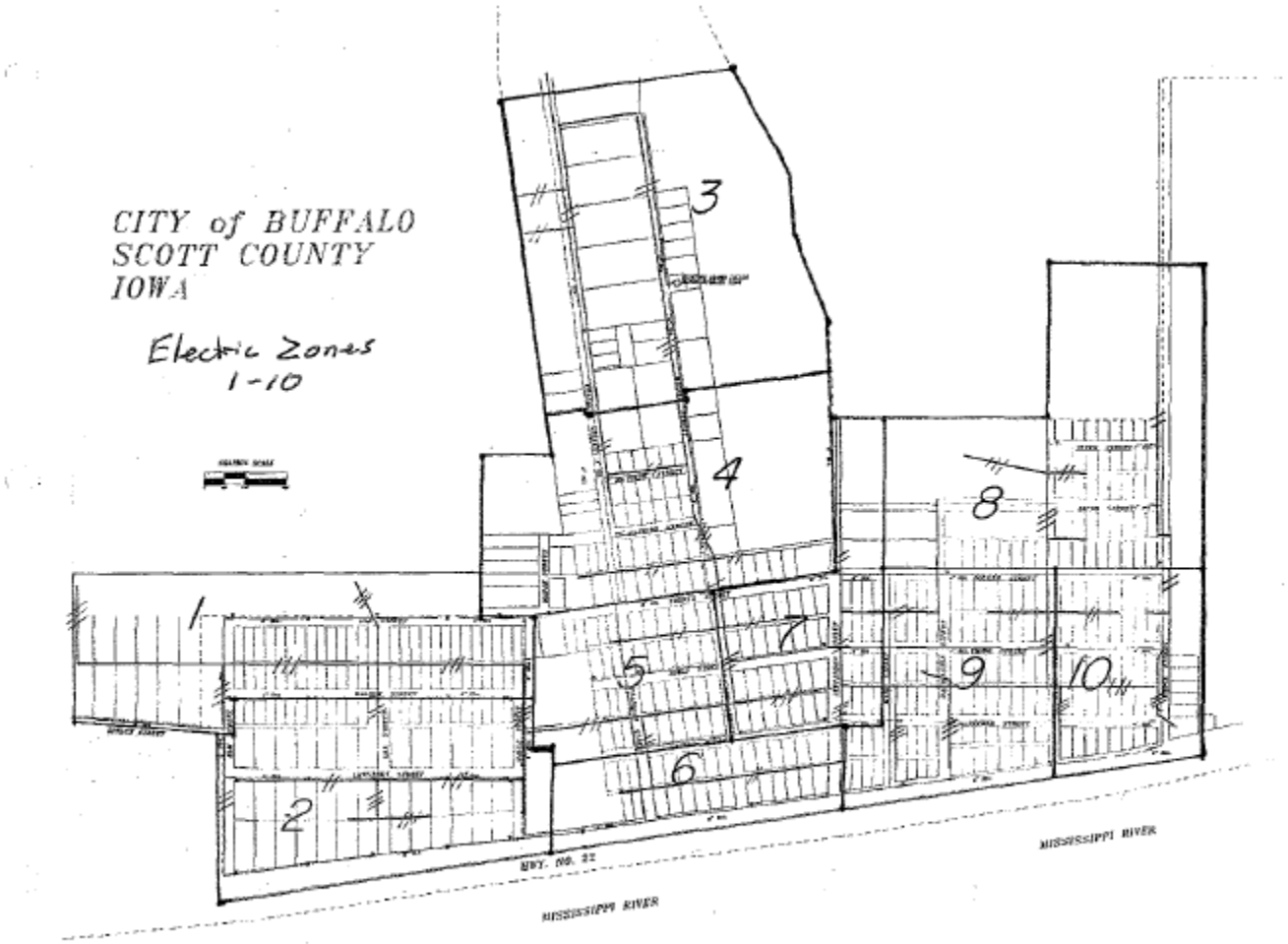
*Substation Name / Location:*_____

Inspection Schedule and Current Status

Year	20__	20__	20__	20__	20__	20__	20__	20__	20__	20__
Jan										
Feb										
Mar										
Apr										

May										
June										
July										
Aug										
Sept										
Oct										
Nov										
Dec										

Electric Zones 1-10



DISTRIBUTION SYSTEM GROUND LINE

INSPECTION SCHEDULE

These inspections will be conducted over a _____year period with approximately _____ percent inspected each year. The area to be inspected each year is described in the following schedule. Maps are used to identify the area to be inspected.

YEAR		**DESCRIPTION**
20__	Zone 1	
20__	Zone 2	
20__	Zone 3	
20__	Zone 4	
20__	Zone 5	

20__	Zone 6	
20__	Zone 7	
20__	Zone 8	
20__	Zone 9	
20__	Zone 10	

NOT TO EXCEED 10 YEARS

The current status of this inspection schedule, as it pertains to the specific area (map number), is shown on the next page. If not included here, maps are located _____.

DISTRIBUTION SYSTEM GROUND LINE

INSPECTION SCHEDULE

Key: Indicate the current status by marking the diagram with the appropriate symbol.

□

-Unscheduled Inspection

○

-Area Scheduled for Inspections

Q

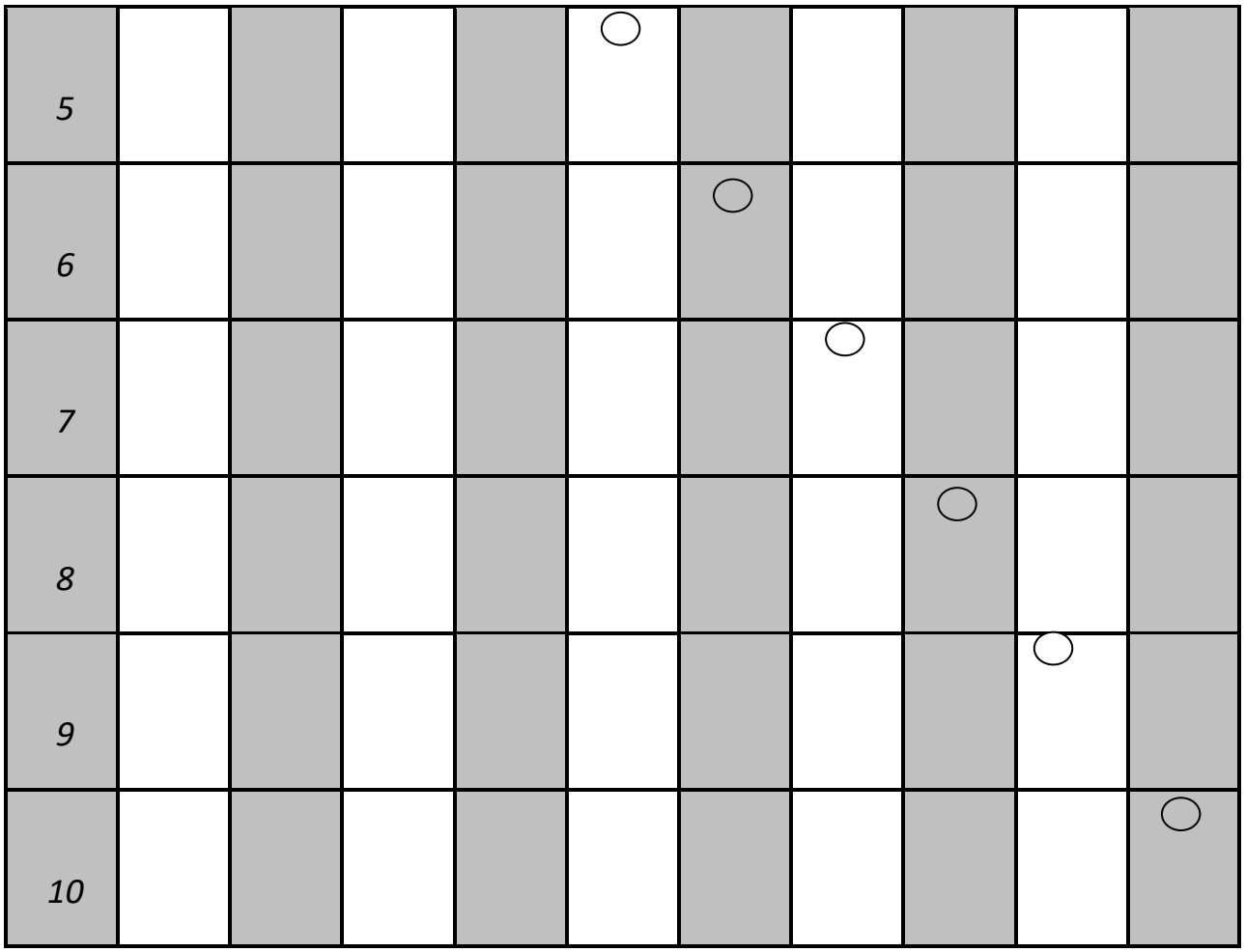
-Inspection Completed

Ø

-Replacements and Repairs to Correct Deficiencies Completed

Inspection Schedule and Current Status

Zone #	20__	20__	20__	20__	220__	20__	20__	20__	20__	20__
1	◯	◯								
2										
3			◯							
4				◯						


5
6
7
8
9
10

DISTRIBUTION SYSTEM GROUND ROD

INSPECTION SCHEDULE

These inspections will be conducted over a _____year period with approximately _____ percent inspected each year. The area to be inspected each year is described in the following schedule. Maps are used to identify the area to be inspected.

YEAR		**DESCRIPTION**
20__	Zone 1	
20__	Zone 2	
20__	Zone 3	
20__	Zone 4	
20__	Zone 5	
20__	Zone 6	
20__	Zone 7	
20__	Zone 8	
20__	Zone 9	
20__	Zone 10	

NOT TO EXCEED 10 YEARS

The current status of this inspection schedule, as it pertains to the specific area (map number), is shown on the next page. If not included here, maps are located _____.

DISTRIBUTION SYSTEM GROUND ROD

INSPECTION SCHEDULE

Key: Indicate the current status by marking the diagram with the appropriate symbol.

-Unscheduled Inspection

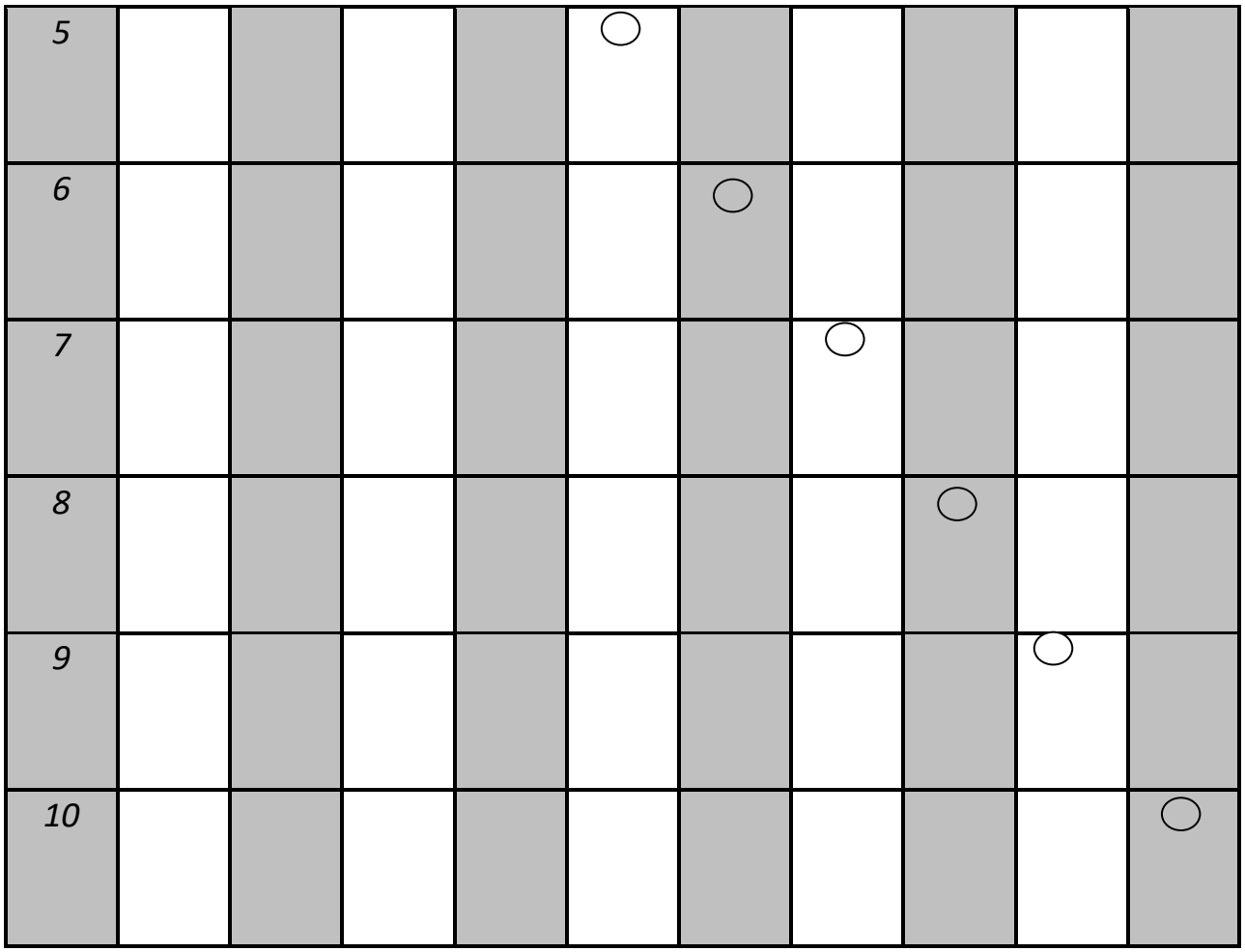
-Area Scheduled for Inspections

-Inspection Completed

-Replacements and Repairs to Correct Deficiencies Completed

Inspection Schedule and Current Status

Zone #	20__	20__	20__	20__	20__	20__	20__	20__	20__	20__
1	○	○								
2										
3			○							
4				○						


5
6
7
8
9
10

UNDERGROUND DISTRIBUTION SYSTEM

INSPECTION SCHEDULE

These inspections will be conducted over a _____year period with approximately _____ percent inspected each year. The area to be inspected each year is described in the following schedule. Maps are used to identify the area to be inspected.

YEAR		**DESCRIPTION**
20__	Zone 1	
20__	Zone 2	
20__	Zone 3	
20__	Zone 4	
20__	Zone 5	
20__	Zone 6	
20__	Zone 7	
20__	Zone 8	
20__	Zone 9	
20__	Zone 10	

NOT TO EXCEED 10 YEARS

The current status of this inspection schedule, as it pertains to the specific area (map number), is shown on the next page. If not included here, maps are located _____.

UNDERGROUND DISTRIBUTION SYSTEM

INSPECTION SCHEDULE

Key: Indicate the current status by marking the diagram with the appropriate symbol.

□

-Unscheduled Inspection

○

-Area Scheduled for Inspections

⊘

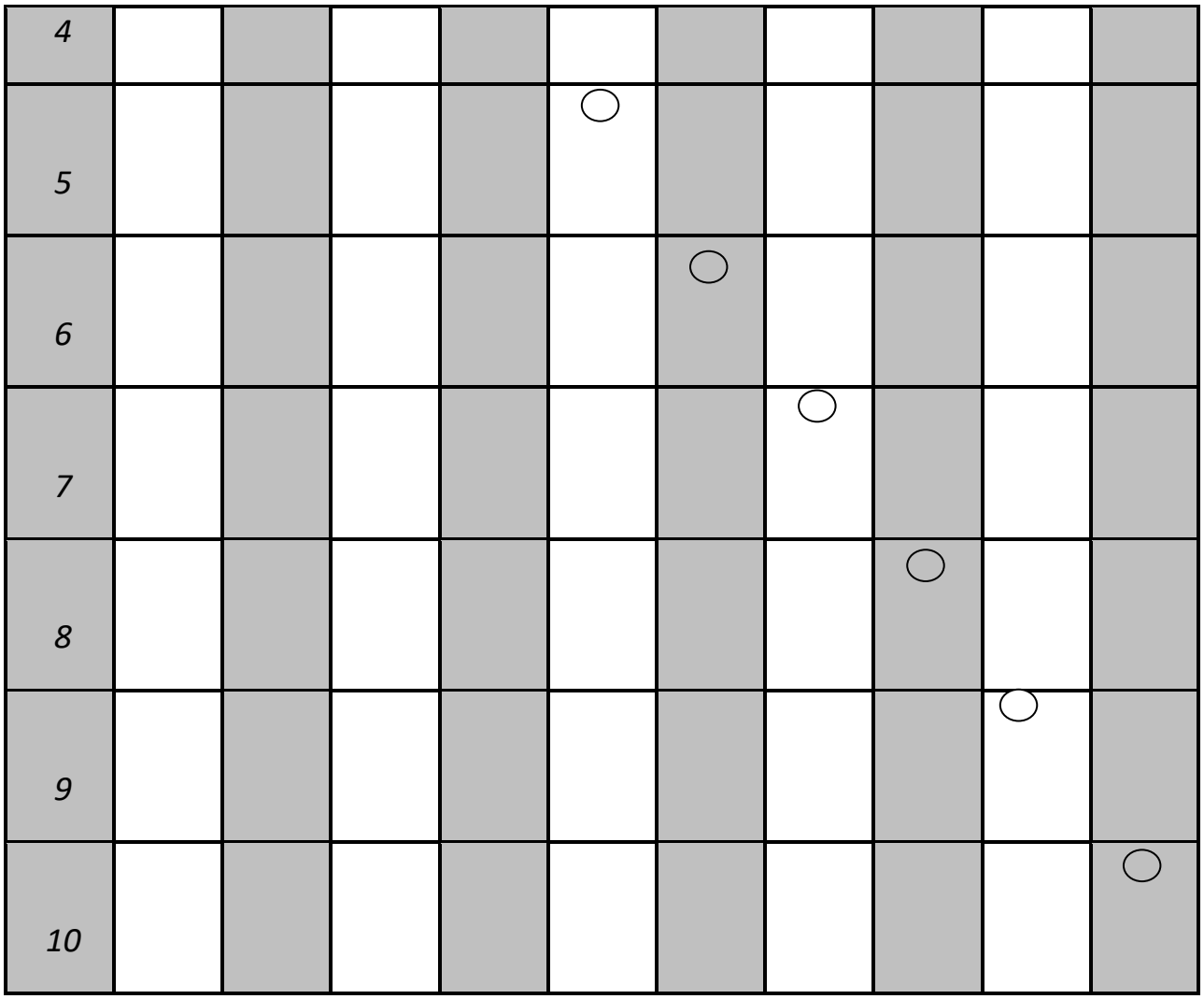
-Inspection Completed

⊗

-Replacements and Repairs to Correct Deficiencies Completed

Inspection Schedule and Current Status

Zone #	20__	20__	20__	20__	20__	20__	20__	20__	20__	20__
1	○	○								
2										
3			○							
				○						


4
5
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10

URD GROUND ROD

INSPECTION SCHEDULE

These inspections will be conducted over a _____year period with approximately _____ percent inspected each year. The area to be inspected each year is described in the following schedule. Maps are used to identify the area to be inspected.

YEAR		**DESCRIPTION**
20__	Zone 1	
20__	Zone 2	
20__	Zone 3	
20__	Zone 4	
20__	Zone 5	
20__	Zone 6	
20__	Zone 7	
20__	Zone 8	
20__	Zone 9	
20__	Zone 10	

NOT TO EXCEED 10 YEARS

The current status of this inspection schedule, as it pertains to the specific area (map number), is shown on the next page. If not included here, maps are located _____.

URD GROUND ROD

INSPECTION SCHEDULE

Key: Indicate the current status by marking the diagram with the appropriate symbol.

□

-Unscheduled Inspection

○

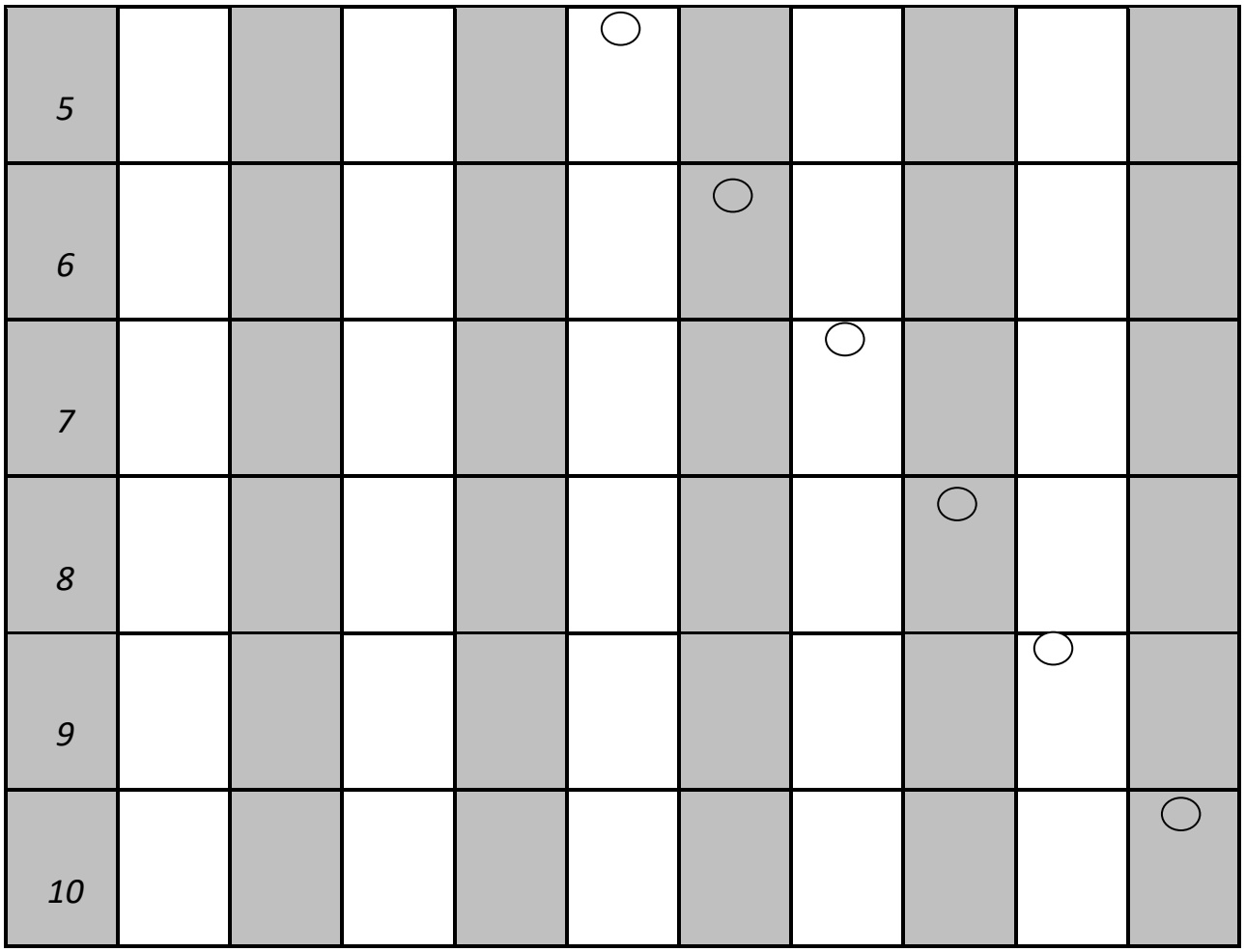
-Area Scheduled for Inspections

-Inspection Completed

-Replacements and Repairs to Correct Deficiencies Completed

Inspection Schedule and Current Status

Zone#	20__	20__	20__	20__	20__	20__	20__	20__	20__	20__
1	○	○								
2										
3			○							
4				○						


5
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10

VEGETATION & TREE TRIMMING

INSPECTION SCHEDULE

Inspection of all electric lines will be conducted over a _____year period with approximately _____ percent inspected each year. The area to be inspected each year is described in the following schedule. Maps are used to identify the area to be inspected.

YEAR		DESCRIPTION
20__	Zone 1	
20__	Zone 2	
20__	Zone 3	
20__	Zone 4	
20__	Zone 5	
20__	Zone 6	
20__	Zone 7	
20__	Zone 8	
20__	Zone 9	
20__	Zone 10	

NOT TO EXCEED 5 YEARS

The current status of this inspection schedule, as it pertains to the specific area (map number), is shown on the next page. If not included here, maps are located _____.

VEGETATION & TREE TRIMMING

INSPECTION SCHEDULE

Key: Indicate the current status by marking the diagram with the appropriate symbol.

□ *-Unscheduled Inspection*

○ *-Area Scheduled for Inspections*

⊘ *-Inspection Completed*

⊗ *-Replacements and Repairs to Correct Deficiencies Completed*

Inspection Schedule and Current Status

Map #	20__	20__	20__	20__	20__	20__	20__	20__	20__	20__
	○	○				○				
							○			
			○					○		
				○					○	
					○					○

ATTACHMENT B

GRAIN BIN NOTIFICATION

On an annual basis electric utilities are required to conduct public information campaigns regarding electric service to grain bins. [See 199 IAC 25.2(3)]. The notification is meant to reduce safety hazards as a result of improper clearance between grain bins and electric lines. Clearance requirements describing physical separation of power lines from grain bins are specified in the National Electrical Safety Code, Rule 234F.

To comply with these requirements, a utility must do the following:

1. Adopt an appropriate Notice of Compliance (see example on following page)
2. Provide public notice annually
3. Provide evidence of compliance with this rule to IUB inspectors during an on-site inspection

A utility may refuse electric service to any grain bin built near existing electric lines if the clearances specified in NESC rule 234F are not met. This right to refuse service only applies to grain bins loaded by portable augers, conveyors or elevators and built after September 9, 1992, or to grain bins loaded by permanently installed augers, conveyors, or elevator systems installed after December 24, 1997.

A brochure of grain bin clearance guidelines is available on the IAMU website at www.iamu.org. Insert that brochure, or similar information used for your Public Information Campaign, in this section along with the Notice of Compliance.

NOTICE OF COMPLIANCE

A sample letter is printed located on the next page.

(City or Utility Letterhead)

DATE

Notice of Compliance

IAC-199 Chapter 25

25.2(3) Grain Bins

In accordance with section 25.2(3) of the Iowa Administrative Code, this notice is part of a public information campaign to inform farmers, farm lenders, grain bin merchants, and city and county zoning officials of the hazards of and standards for construction of grain bins near power lines.

To assure proper safety, if a new grain bin is built near an existing electric line, the electric utility may refuse service if the clearances specified by the American National Standards Institute "National Electrical Safety Code," Rule 234F are not met.

Do not hesitate to contact (Utility Contact) at (Phone Number) if you have any questions regarding this notice or need further information about appropriate clearances.

_____

Utility Representative

ATTACHMENT C

SAMPLE WORK ORDER FORM

A work order is to be used when deficiencies are noted during the inspection. Even if deficiencies are repaired on the spot, a work order needs to be filled out. Remember to record the work order number in the space provided on the Field Inspection Form. For example when the work has been completed for the first work order written on January 1, 2022, it would be recorded on the appropriate inspection form as 1/1/22-1.

The sample work order form below may be copied on card stock.

WORK ORDER

<table>
<tr><td colspan="2">_____ FIELD INSPECTION FORM Work Order No. _____</td></tr>
<tr><td>DATE</td><td>REPORTED BY</td></tr>
<tr><td>LOCATION (e.g. pole no.)</td><td>DEFICIENCY GRADE
1 ____ 2 ____ 3 ____</td></tr>
<tr><td colspan="2">ITEM THAT NEEDS ATTENTION</td></tr>
<tr><td colspan="2">ACTION TAKEN</td></tr>
<tr><td>DATE COMPLETED</td><td>COMPLETED BY</td></tr>
</table>

ATTACHMENT D

SAMPLE OFFICE INSPECTION THAT IS CONDUCTED BY THE IOWA UTILITIES BOARD

Name of Utility:

Address of Office Checked:

Name and Title of Person Interviewed:

Date:

File: RE-

Inspector:

Sections cited are from Board rules 199 IAC chapter 20, chapter 25 and chapter 42.

	Question	Section	Answer
1.	Is a copy of the utility's Inspection and Maintenance Plan available?	27.10(3)(f), 25.3	
2.	Has the current version of the plan been filed using the Board's electronic filing system?	25.3(1)	
3.	Does the plan include a listing of all counties in which the utility has electric supply lines in Iowa?	25.3(3)a	
4.	If the plan is implemented by district or regional offices, are their addresses included?	25.3(3)a	
5.	Is the list of counties and addresses current?	25.3(3)a	
6.	Does the plan include periodic inspection intervals for facilities? Distribution Interval: Transmission Interval: Substation Interval: Pole Inspection Interval:	25.3(3)b1	
7.	Are the inspection intervals based on good industry practice?	25.3(3)b1	
8.	Does the pole inspection procedure include tests in additional to visual inspection?	25.3(3)d	

9.	Does the plan include a schedule for the inspection of all supply lines and substations?	25.3(3)b1 25.3(3)b2	
10.	Do the schedule's inspection frequencies agree with the plan's periodic inspection intervals?	25.3(3)b2	
11.	Does the plan include a complete listing of all categories of items to be checked during an inspection?	25.3(3)b2	
12.	Does the plan include copies of instructions to be used by utility personnel during inspections?	25.3(3)b4	
13.	If the plan references guide materials, are copies of these materials available?	25.3(3)b4	
14.	Does the plan include a schedule for tree trimming or other vegetation management? Schedule:	25.3(3)c1	
15.	Is the schedule based on good industry practice?	25.3(3)c1	
16.	Does the plan include written procedures for vegetation management?	25.3(3)c2	
17.	Do the tree trimming practices protect the health of the tree and reduce undesirable re-growth patterns? [ANSI A300 (Part 1)-2008, "Pruning," and Section 35 of *The Lineman's and Cableman's Handbook* are suggested as guides for tree trimming practices.]	25.3(3)c2	

NOTE: If any of the above questions (3-17) were answered "NO", the utility's Inspection and Maintenance Plan likely needs to be corrected and re-filed with the Board.

	Question	Section	Answer
18.	Does assessment of the I&M Plan in the utility's most recent annual report to the Board agree with the findings of this inspection?	25.3(2)	
19.	Does the utility keep sufficient records to demonstrate compliance with its inspection and vegetation management program?	25.3(4)	
20.	Do the inspection records show the deficiencies found and the corrective actions taken or scheduled?	25.3(4)	
21.	Do the vegetation management records show the locations and dates the work was conducted?	25.3(4)	
22.	Do the records show the inspections and vegetation management are being done in accordance with the I&M Plan schedule?	25.3(4)	
23.	Are the records kept as long as required?	25.3(4)	
24.	Is corrective action for items identified during inspection taken in a reasonable period of time?	25.4	
25.	Does the utility possess a copy of the 2017 National Electrical Safety Code? (This edition is currently adopted in Board rules.)	25.2(1)	
26.	Does the utility conduct annual public information campaigns on grain bin locations and hazards?	25.2(3)a	
27.	Is the utility correctly using the overhead vertical line clearances from the tables in post-1990 editions of the National Electrical Safety Code?	25.2(2)b4	
28.	Is the utility aware of the accident reporting requirements?	25.5	
29.	If there were any reportable accidents since the last inspection, were they properly reported to the Board Duty Officer?	25.5	
30.	If the utility has facilities crossing a railroad right-of-way, has the required emergency contact information been filed? (This information can be checked or revised at https://iub.iowa.gov/node/74)	42.4(2)	
31.	Where there is joint-use construction and another company's equipment has caused a violation of the Iowa Electrical Safety Code, is the other company notified by the utility?	25.2	
32.	If the utility has notified another company of necessary repairs, does the utility keep records of the necessary repairs until the repairs are completed?	25.3(4)	

COMMENTS:

ATTACHMENT E

RESOURCES AND OTHER INFORMATION

The following are important sources of information for developing inspection plans and conducting the inspections:

ANSI A300 (Part 1)-2008 (R2014), "Pruning" and Section 35 of "The Lineman's and Cableman's Handbook as suggested by 199 IAC 25.3(5).

Rural Utilities Service (RUS) Bulletins as suggested by 199 IAC 25.3(5):

RUS 1730-1: "Electric System Operation and Maintenance (O&M)"

RUS 1730B-121: "Pole Inspection and Maintenance"

RUS 1724E-300: "Design Guide for Rural Substations"

"Lineman's and Cableman's Handbook," Twelfth Edition; Shoemaker, Thomas M and Mack, James E.; New York, McGraw-Hill Book Co. as adopted by 199 IAC 25.2(5)b

National Electrical Safety Code, ANSI C2-2017 as adopted by 199 IAC 25.2(1) and modified by 199 IAC 25.2(2).

National Electrical Code, ANSI/NFPA 70-2014, as adopted by 199 IAC 25.2(5)(a)

Other accepted standards of good practice recognized by the Iowa Utilities Board are found at 199 IAC 27.5 and 25.3

INTERNET LINKS

Adobe Acrobat Reader

Many files on the internet are in PDF format. An Adobe Acrobat Reader is required to view PDF files. You may download it free of charge from:
http://www.adobe.com/prodindex/acrobat/readstep.html

Department of Agriculture Bulletins URL

http://www.rurdev.usda.gov/UEP_HomePage.html

Iowa Administrative Code

Chapter 27

https://www.legis.iowa.gov/law/administrativeRules/rules?agency=199&chapter=27&pubDate=11-03-2021

Chapter 25

https://www.legis.iowa.gov/law/administrativeRules/rules?agency=199&chapter=25&pubDate=11-03-2021

Iowa Association of Municipal Utilities

The IUB website and other important legislative/regulatory resources are accessible by clicking on the Legislative/Regulatory on the IAMU website, www.iamu.org

Iowa Utilities Board

The Iowa Utilities Board homepage link is included here for your convenient access to information about the ME-1 form and other resources available through the IUB website.
http://www.state.ia.us/government/com/util/index.html

National Electrical Code

The National Fire Protection Association (NFPA) has an internet catalog which includes the National Electrical Code (NEC). In addition to ordering information for the 2011 NEC, the website also contains other helpful resources. The NFPA catalog may be found at http://www.nfpacatalog.org. IAMU is a member of NFPA; you may order NFPA materials through IAMU at discounted pricing.

National Electrical Safety Code

The Institute of Electrical and Electronics Engineers (IEEE) has a website for the National Electrical Safety Code (NESC). In addition to ordering information for the NESC, the website also contains Tentative Interim Amendments, Errata Sheets, and Interpretations. The NESC Zone home page may be found at http://standards.ieee.org/nesc. You may order NESC materials through IAMU at discounted pricing.

NOTE: Any code book, ANSI Standard, Lineman's and Cableman's Handbook or reference material the utility may need for their inspection program may be ordered through IAMU. Call 800/ 810-4268.