2 copies ~~HERB FREYE~~

MINI AUDIT

FOR THE

CITY OF BLOOMINGTON

rieke
carroll
muller
associates inc

architects
engineers
land surveyors
planners

MAY, 1980

RCM JOB NO. 801704

Relate to 1983 Laws, ch 197, sec 5

CITY HALL

CREEKSIDE CENTER

PUBLIC WORKS ENGINEERING

(X)1 REHAB PUBLIC WORKS GARAGE (2) BAYS to OFFICE SPACE

PUBLIC WORKS - WESTERN MAINTENANCE GARAGE

RYAN BUILDING

RESCUE STATION

(X)2 ART CENTER

HISTORICAL MUSEUM

FIRE STATION # 1

FIRE STATION # 2

FIRE STATION # 3

FIRE STATION # 4

FIRE STATION # 5

FIRE STATION # 6

(X)3 COMMUNITY ICE GARDEN

DWAN GOLF COURSE - CLUB HOUSE

DWAN GOLF COURSE MAINTENANCE BUILDING

HYLAND GREENS GOLF COURSE - CLUB HOUSE

WATER TREATMENT PLANT

WATER RESERVOIR - PUMP HOUSE

PUMPING STATION

(X)1 RECONSTRUCTED Roof to and other as recommended

(X)2 REMODELED WALLS - Added insulation

(X)3 REPAINTED inside ceiling AS recommended

MINI-AUDIT REPORT

FORM NO. MIN-01

A — CONTACT DATA

BUILDING NAME		NAME OF ORGANIZATION		DATE
City Hall		City of Bloomington		5-17-80
BUILDING ADDRESS		**ADDRESS**		
2215 West Old Shakopee Road		2215 West Old Shakopee Road		
CITY	**ZIP CODE**	**CITY**	**ZIP CODE**	
Bloomington, MN	55431	Bloomington, MN	55431	
PERSON COMPLETING FORM	**TELEPHONE**	**CONTACT PERSON**	**TELEPHONE**	
Randy Smith	(612) 935-6901	Arthur Jensen	(612) 881-5811	

B — BUILDING ELIGIBILITY CODE

Instructions: For blocks 1 and 2 check the box which best fits the building ownership conditions. For block 3 determine which of the four categories describes the building type and then within the category check off the sub category befitting the building function.

1. OWNERSHIP TYPE
   - [X] Public (PUB)
   - [ ] Non-Profit Association (NAP)

2. ULTIMATE OWNER
   - [ ] County (CNTY)
   - [X] City (CITY)
   - [ ] Township (TOWN)
   - [ ] State (STAT)
   - [ ] Public School (PUSC)
   - [ ] Private School (PRSC)
   - [ ] Non-Profit Association (NPAP)
   - [ ] Indian Tribe (INDN)

3a. SCHOOLS
   - [ ] Elementary (SCHL-ELM)
   - [ ] Secondary (SCHL-SECD)
   - [ ] Coll. or Univ. (SCHL-POST)
   - [ ] Vocational (SCHL-VOCL)
   - [ ] Education Agency (SCHL-ADMN)
   - [ ] Administration (SCHL-ADMN)
   - [ ] OTHER (SCHL-OTHR)

b. PUBLIC CARE
   - [ ] Nursing Home (PBCR-NURS)
   - [ ] Long Term Care (PBCR-TERM)
   - [ ] Rehab. Facility (PBCR-RHAB)
   - [ ] Public Health Ctr. (PBCR-HCTR)
   - [ ] Res. Child Care Ctr. (PBCR-RCCC)

c. LOCAL GOVERNMENT
   - [X] Office (LOCG-OFFC)
   - [ ] Storage (LOCG-STRG)
   - [X] Service (LOCG-SERV)
   - [ ] Library (LOCG-LBRY)
   - [X] Police (LOCG-PLCE)
   - [ ] Fire (LOCG-FIRE)
   - [ ] OTHER (LOCG-OTHR)

d. HOSPITALS
   - [ ] General (HOSP-GENL)
   - [ ] Tuberculosis (HOSP-TUBR)
   - [ ] OTHER (HOSP-OTHR)

C — MINI-AUDIT FUNDING REQUEST

Instructions: With reference to page 23 entitled Funding Information, determine if the facilities are eligible for both Federal and State funding or just Federal funding. then answer the questions correctly for the situation. This section must be signed and dated by the head of the organization.

If eligible for both Federal and State Funding:

Have you received a mini-audit grant before? [ ] Yes [X] No

Have you previously applied for mini-audit funding? [X] Yes [ ] No

Do you wish to apply for mini-audit funding? [ ] Yes [X] No

Date: _____

Name: _____

Signature: _____

If eligible for Federal funding only:

Have you received a mini-audit grant before? [ ] Yes [ ] No

Have you previously applied for mini-audit funding? [ ] Yes [ ] No

Do you wish to apply for mini-audit funding? [ ] Yes [ ] No

The 50% match for Federal funds will come from: (Use additional sheets if necessary.)

Date: _____

Name: _____

Signature: _____

D ENERGY REPORT CHECK-OFF

Check the type of energy report which was completed and submitted prior to this mini-audit report.

- ☐ Elementary School Energy Report (Form No. ED-00444-02)
- ☐ Secondary School Energy Report (Form No. ED-00445-02)
- ☒ Existing Building Energy Report (Form No. EN-00041-01)

If an energy report has not been completed previous to this mini-audit report, one must be included with this report. Elementary, secondary, and vocational schools should use form ED-00444-02 or form ED-00445-02, depending on building complexity. All other buildings should use the existing building energy report, form EN-00041-01.

E MINI-AUDIT STATEMENTS

Instructions: This section is to be completed and signed by a registered professional engineer or by a certified mini-auditor who has successfully completed the State of Minnesota's Mini-Audit Procedures Course. This section should be completed after this mini-audit report and an energy report are completed. All blanks must be filled in.

I have reviewed the energy report and/or the energy report results for this building. I found all information contained therein to be correct *OR* I have corrected any misinformation on the energy report which will be resubmitted with this mini-audit report to the Minnesota Energy Agency.

I am not directly responsible for the day to day operations of this building being audited.

I have fully disclosed my financial interests relating to this mini-audit and any energy conservation measures considered by this audit.

I have walked through this building and have found the recommendations listed in section I of this mini-audit report to be the operations and maintenance changes, and low cost energy conservation measures, which would reduce energy consumption in this building.

I have made a rough estimate, in section G, of the range of savings which may result from the implementation of all of the mini-audit opportunities listed in section I. I am not responsible if the actual savings resulting from this mini-audit do not fall within the estimated range.

Based on actual records, the energy conservation operating and maintenance procedures listed in section K ___did not___ (did, did not) save at least 20% of the building's energy consumption as specified in section I.

Based upon my observation of the physical characteristics of this building and the building's major energy using systems, I recommend that this ___should___ (should, should not) be the subject of a maxi-audit.
I realize that this is not a final judgement, that the State reserves the right to make the maxi-audit funding determination based on this mini-audit report and other criteria.

Based upon the information in section E and the information referred to in section F, I recommend that this building ___should not___ (should, should not) undergo further solar conversion analysis, and/or ___should not___ (should, should not) undergo further analysis of the renewable resources — waste, wind, wood. (Circle proper resources)

In my judgement, as a mini-auditor, all of the above statements are true and correct.

Witnessed by:

Randy Smith
Mini-Auditor's Name (Print or Type)

Randy Smith 206
Signature

Rieke Carroll Muller Assoc., Inc.
Firm Name (if none, enter none)

PO Box 130 Hopkins, MN 55343
Address

(612) 935-6901
Phone

5-17-80
Date

Building Organizational Authority (Print or Type)

Signature

Date

F AUDIT TEAM

NAME	POSITION	ORGANIZATION
Randy Smith	Certified Mini Auditor	Rieke Carroll Muller Assoc., Inc.
Paul Martinsen	Mechanical Engineer	Rieke Carroll Muller Assoc., Inc.
Scott Hutchins	Electrical Designer	Rieke Carroll Muller Assoc., Inc.
Reinert Ege	Maintenance Foreman	City of Bloomington

G BUILDING INFORMATION

BRIEF DESCRIPTION OF GENERAL BUILDING CONDITION (i.e. type, and function)
Good, Offices

MAJOR CHANGES PLANNED WITHIN NEXT 15 YEARS (i.e. demolition, rehabilitation, conversion from one building type to another)
None

STRUCTURAL COMPONENTS OF ROOF (i.e. metal beams, wooden rafters, concrete)
Concrete

ROOFING MATERIAL (i.e. tar and gravel, shingles, tile)
Tar and Gravel

H SOLAR POTENTIAL INFORMATION

INSTRUCTIONS: Correctly answer the following questions for the building being mini-audited.

Is there open land adjacent to the building?
☐ Yes ☒ No

Solar collectors need to be located in an unshaded area. Is the roof of the building and the south facing wall unshaded between the hours of 9 a.m. and 3 p.m.?
Roof: ☒ Yes ☐ No
South facing Wall: ☐ Yes ☒ No

If the roof or wall are partly shaded, what percentage of the surface is unshaded?
% of roof unshaded _____ %
% of south facing wall unshaded 60 %

What is the overall shape of the building?
☐ square ☒ rectangle ☐ H-shaped ☐ E-shaped ☐ other (specify) _____

Is the roof of the building flat or pitched?
☒ flat ☐ pitched

If pitched, what is the compass orientation of the ridgeline? _____

If pitched, what is the angle that the roof makes with horizontal? _____ °

Are there large obstructions on the roof such as chimneys, rooms for mechanical equipment, ventilating units, water towers, etc?
☒ Yes ☐ No

What is the exterior facing material for the south facing wall? Face Brick

What percentage of the south facing wall is glass? 5 %

Is the building's space heating equipment located within or on the building? (A no answer indicates the equipment is in a separate building.)
☒ Yes ☐ No

If the space heating equipment is inside the building, where is it located?
☐ Ground Floor ☒ Basement ☐ Roof ☐ Other (specify) _____

Is the building's water heating equipment located within the building? (A no answer indicates the equipment is in a separate building.)
☒ Yes ☐ No

If the water heating equipment is inside the building, where is it located?
☐ Ground Floor ☒ Basement ☐ Other (specify) _____

Is the water heating system a central system, does it consist of multiple units, or is it a combination of the central and multiple units?
☒ Central ☐ Multiple ☐ Combination

I — 20% SAVINGS DATA

Instructions: Enter the total energy used of each fuel type for the base period and the year when there was a 20% or greater energy savings. Indicate the unit of measure. Enter the appropriate conversion factor from Appendix B to convert energy usage into Btu's. Be sure to enter the fiscal years of which the data applies. Refer to pages 7 and 15 for a complete explanation of this section.

BASE PERIOD YEAR — Fiscal Year _____

ENERGY TYPE	ENERGY USAGE	CONVERSION FACTOR	BTU USAGE
Electricity			
Fuel 1			
Fuel 2			
TOTAL			

20% SAVINGS YEAR — Fiscal Year _____

ENERGY TYPE	ENERGY USAGE	CONVERSION FACTOR	BTU USAGE
Electricity			
Fuel 1			
Fuel 2			
TOTAL			

J — SAVINGS ESTIMATION

Instructions: This section is to be completed by the mini-auditor after the walk-thru portion of the mini-audit. First, check the appropriate boxes which state the roughly estimated range of the percent of total electrical and fuel consumption which would be saved resulting from the implementation of all of the new mini-audit opportunities listed in section L. Secondly, calculate the range of energy and cost savings by multiplying the estimated percentages by the annual electrical and fuel consumption data on the energy report.

1 Check two boxes in each category —

Range of Electrical Savings — ☒ 0% ☒ 5% ☐ 10% ☐ 15% ☐ 20% ☐ 25% ☐ other (specify) _____

Range of Fuel Savings — ☐ 0% ☒ 5% ☒ 10% ☐ 15% ☐ 20% ☐ 25% ☐ other (specify) _____

2 Calculate ranges of energy and cost savings —

Range of Electrical Savings

	% Range		Annual Electrical Consumption		Range of Energy Savings	% Range		Annual Electrical Dollars Spent		Range of Electrical Dollars Savings
lower bound	0 %	x	1179600 kwh	=	0 kwh,	0 %	x	$39421.94	=	$ 0
to upper bound	5 %	x	1179600 kwh	=	58980 kwh,	5 %	x	$39421.94	=	$ 1971.10

3 **Range of Fuel Savings**

	% Range		Annual Fuel Consumption		Range of Fuel Savings	% Range		Annual Fuel Dollars Spent		Range of Fuel Dollars Savings
lower bound	5 %	x	18.2×10^8 Btu	=	91.2×10^6 Btu,	5 %	x	$15,537.23	=	$ 776.86
to upper bound	10 %	x	18.2×10^8 Btu	=	18.2×10^7 Btu,	10 %	x	$15,537.23	=	$ 1553.72

The mini-auditor is not responsible if actual savings resulting from the implementation of the energy conservation opportunities listed in section I do not fall between the roughly estimated ranges which are specified.

K

Instructions: Read through the list of energy conservation opportunities provided. As you read through the items, list below those items which have already been undertaken in your facility. The description of the past energy conservation action should contain the specific building location where the recommendation applies, if applicable. Indicate the date of implementation of each item and its classification number. Energy conserving items which have been undertaken and are not on the list provided should also be included along with their appropriate classification numbers. The classification number should be taken from the classification scheme for energy conservation opportunities listed on pages 25 through 37. *This section of the mini-audit report should be completed by building personnel prior to the walk-through by the mini-auditor.*

ITEM NO.	CLASSIFICATION NO.		PAST ENERGY CONSERVATION ACTIONS	ENERGY SAVINGS	ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS		OPTIONAL:	OPTIONAL:	

Note Reproduce this page as necessary

NEW OPPORTUNITIES

Instructions: Read through the energy conservation recommendation list provided. Then walk through the building with the list. Examine the suggested maintenance and operational changes, and any other low cost energy conservation measures, that pertain to the facility. As you go along, record the item number, the classification number of the recommendation, and the new mini-audit opportunity. The description of the mini-audit opportunity should contain the specific building location where the recommendation applies, if applicable. Any recommendation not found on the list may also be included. For those other recommendations, assign an appropriate classification number from the classification scheme for energy conservation opportunities listed on pages 25 through 37. The date of implementation should only be completed as the recommendation is implemented. *This section of the mini-audit report should be completed by the mini-audit team during the building walk-through.*

OPTIONAL: OPTIONAL:

ITEM NO.	CLASSIFICATION NO. MAJOR CLASS	CLASSIFICATION NO. SUB CLASS	NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS	ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
1	1	1	Keep all controls free of dust.			
2	1	2	Eliminate excessive motor vibration.			
3	1	2	Where it is impractical to replace motors which have low loads and power factors, use capacitors at motor terminals to correct the power factor to 90%.			
4	1	3	Check power factors and make adjustments to correct equipment.			
5	1	4	Shade outdoor transformer banks from solar radiation.			
6	2	1	Check the amount of insulation in the ceiling.			
7	2	1	Add insulation above suspended ceilings if needed.			
8	2	6	Caulk around all pipes, louvers, or other openings on the roof.			
9	2	8	Caulk all cracks in walls that allow air and moisture into the building.			
10	3	1	Check operation of entire heating/cooling system, including control valves and dampers.			
11	3	1	Check the calibration of all controllers and devices for proper settings and operations.			
12	3	1	Adjust automatic timers or add time clocks to automatically set back temperature for night and weekend operation.			
13	3	1	Raise the supply air (or chilled water) temperature for cooling to the highest point necessary to provide minimum required cooling.			
14	3	1	Lower the supply air (or hot water) temperature for heating to the lowest point necessary to provide minimum required heating.			
15	3	1	Turn off all humidifiers at night and during unoccupied cycles.			
16	3	1	Control humidity to a maximum of 30%.			
17	3	1	65°F maximum occupied, 60°F maximum unoccupied during the heating season.			

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NEW OPPORTUNITIES

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ITEM NO	CLASSIFICATION NO		NEW MINI-AUDIT OPPORTUNITIES	OPTIONAL: ENERGY SAVINGS	OPTIONAL: ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS				
18	3	2	Keep radiators free from blockage. A one foot clearance in front of convectors, radiators, or registers is desirable.			
19	3	2	Vent all hot water radiators and convectors to assure that water will completely fill the interior passages.			
20	3	2	In the public spaces of all buildings such as lobbies, corridors, stairwells, vestibuiles, and lounges, conserve energy by turning off unitary terminal units and removing handles from control valves. If balancing cocks are included, turn them to the off position. In each stairwell of multi-level buildings, shut off all but the unit located at the bottom. Turn off heat in vestibules and foyers.			
21	3	3	Keep condenser coil face clean to permit proper air flow.			
22	3	3	Inspect ductwork for air leakage. Seal all leaks by taping or caulking.			
23	3	3	Inpsect hot and chilled water piping strainers. Clean when required.			
24	3	3	Inspect steam traps to assure that they are passing only condensate, not steam. Repair as necessary.			
25	3	3	Inspect all pressure reducing and regulating valves and related equipment. Adjust, repair or replace as necessary. Inspect damper blades and linkages. Clean, oil and adjust.			
26	3	3	Take special note of fresh air dampers making sure that they close tightly and be sure to repair, replace or provide blade edge gaskets and gasketing at the end of blades.			
27	3	3	Check the timer settings and mechanism on the automatic filter.			
28	3	3	If the automatic filters are advanced according to pressure requirements, check this control for proper functioning.			

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OPTIONAL: OPTIONAL:

ITEM NO	CLASSIFICATION NO		NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS	ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS				
29	4	1	Instruct occupants and maintenance personnel to switch off all lights when they are not needed.			
30	4	1	Consider variable level light switches.			
31	4	2	Locate tasks that need the best illumination closest to the windows, with the task-viewing angle parallel to the windows.			
32	4	2	To reduce glare, rearrange work stations so that side wall daylight crosses perpendicular to the lines of vision.			
33	4	3	Clean fixtures and lamps regularly.			
34	4	3	Replace lamps in groups before they burn out to maintain higher average light output per fixture.			
35	4	3	When repainting, use light colored paint on ceiling, walls and floors but avoid objectionable specular reflections from glass finishes.			
36	4	4	Remove unnecessary lamps, fixtures, and balasts.			
37	4	4	Reduce outside lighting in parking lots and at building signs and entrances to the minimum.			
38	4	4	Use lower wattage lamps to provide the necessary illumination.			
39	4	4	Allow part of a lighting system to be turned off, while maintaining the necessary light.			
40	4	5	Substitute samll table or floor-mounted lamps in lounge areas or waiting rooms and turn off modular ceiling fixtures.			
41	4	5	Provide desk or table lamps in task localized areas.			
42	4	6	Site lighting on building. Change to higher efficiency type fixtures.			
43	5	1	Keep records of the operating schedule, monthly energy consumption and purchase of any new equipment that affects energy consumption of efficiency of the building. These records will indiacte the impact of			

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ITEM NO	CLASSIFICATION NO		NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS OPTIONAL:	ENERGY COST SAVINGS OPTIONAL:	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS				
			energy conservation measures.			
44	5	1	Review the record book on a regular basis.			
45	6	1	Adjust water supply to 100°F for all except special requirements (dishwasher supply units, etc.)			
46	6	2	The burner system of fossil-fuel water heaters should be kept clean and in good operating condition.			
47	6	2	Check for a defective relieve valve from the water heater.			
48	6	2	Periodically drain and remove the sediment from the water heater.			
49	7	4	Maintain the lowest possible hot water temperature which will meet space or domestic hot water needs.			
50	7	4	Maintain water level or pressure to radiators or coils on the highest level of the building.			
51	7	4	Maintain the lowest possible steam pressure suitable for supplying radiation or coils.			
52	7	4	Check cooling tower fan by listening for any unusual noise or vibration.			
			Inspect condition of V-belt(s) and drive. Align fan and motor as necessary.			
53	7	4	Keep the cooling tower clean to minimize both air and water pressure drop.			
54	7	4	Clean cooling tower inlet strainer.			
55	7	4	Inspect spray filled or distributed cooling towers for proper nozzle performance. Clean nozzles as necessary.			
56	7	8	Analyze cooling tower water and maintain acceptable water quality.			

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MINI-AUDIT REPORT

FORM NO. MIN-01

A — CONTACT DATA

BUILDING NAME		NAME OF ORGANIZATION	DATE
Creekside Center		City of Bloomington	6-2-80
BUILDING ADDRESS		**ADDRESS**	
9801 Penn Avenue South		2215 West Old Shakopee Road	
CITY	**ZIP CODE**	**CITY**	**ZIP CODE**
Bloomington, MN	55431	Bloomington, MN	55431
PERSON COMPLETING FORM	**TELEPHONE**	**CONTACT PERSON**	**TELEPHONE**
Paul Martinsen	(612) 935-6901	Athur Jensen	(612) 881-5811

B — BUILDING ELIGIBILITY CODE

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1. OWNERSHIP TYPE
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2. ULTIMATE OWNER
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   - [ ] Fire (LOCG-FIRE)
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   - [ ] General (HOSP-GENL)
   - [ ] Tuberculosis (HOSP-TUBR)
   - [ ] OTHER (HOSP-OTHR)

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Have you previously applied for mini-audit funding? [X] Yes [ ] No
Do you wish to apply for mini-audit funding? [ ] Yes [X] No

Date: _____

Name: _____

Signature: _____

If eligible for Federal funding only:
Have you received a mini-audit grant before? [ ] Yes [ ] No
Have you previously applied for mini-audit funding? [ ] Yes [ ] No
Do you wish to apply for mini-audit funding? [ ] Yes [ ] No
The 50% match for Federal funds will come from: (Use additional sheets if necessary.)

Date: _____

Name: _____

Signature: _____

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Check the type of energy report which was completed and submitted prior to this mini-audit report.

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I am not directly responsible for the day to day operations of this building being audited.

I have fully disclosed my financial interests relating to this mini-audit and any energy conservation measures considered by this audit.

I have walked through this building and have found the recommendations listed in section I of this mini-audit report to be the operations and maintenance changes, and low cost energy conservation measures, which would reduce energy consumption in this building.

I have made a rough estimate, in section G, of the range of savings which may result from the implementation of all of the mini-audit opportunities listed in section I. I am not responsible if the actual savings resulting from this mini-audit do not fall within the estimated range.

Based on actual records, the energy conservation operating and maintenance procedures listed in section K ___did not___ (did, did not) save at least 20% of the building's energy consumption as specified in section I.

Based upon my observation of the physical characteristics of this building and the building's major energy using systems, I recommend that this ___should___ (should, should not) be the subject of a maxi-audit.
I realize that this is not a final judgement, that the State reserves the right to make the maxi-audit funding determination based on this mini-audit report and other criteria.

Based upon the information in section E and the information referred to in section F, I recommend that this building ___should not___ (should, should not) undergo further solar conversion analysis, and/or ___should not___ (should, should not) undergo further analysis of the renewable resources — waste, wind, wood. (Circle proper resources)

In my judgement, as a mini-auditor, all of the above statements are true and correct.

Paul Martinsen
Mini-Auditor's Name (Print or Type)

Paul B. Martinsen P.E. 9597
Signature

Rieke Carroll Muller Assoc., Inc.
Firm Name (if none, enter none)

P.O. Box 130 Hopkins, MN 55343
Address

(612) 935-6901
Phone

6-2-80
Date

Witnessed by:

Building Organizational Authority (Print or Type)

Signature

Date

F AUDIT TEAM

NAME	POSITION	ORGANIZATION
Paul Martisen	Mechanical Engineer	Rieke Carroll Muller Assoc., Inc.
Reinert Ege	Maintenance Engineer	City of Bloomington

G BUILDING INFORMATION

BRIEF DESCRIPTION OF GENERAL BUILDING CONDITION (i.e. type, and function)
Good Condtion - Senior Citizen's Center, Health Offices, Nursery School

MAJOR CHANGES PLANNED WITHIN NEXT 15 YEARS (i.e. demolition, rehabilitation, conversion from one building type to another)
None

STRUCTURAL COMPONENTS OF ROOF (i.e. metal beams, wooden rafters, concrete)
Bar Joist

ROOFING MATERIAL (i.e. tar and gravel, shingles, tile)
Tar and Gravel

H SOLAR POTENTIAL INFORMATION

INSTRUCTIONS: Correctly answer the following questions for the building being mini-audited.

Is there open land adjacent to the building?
☒ Yes ☐ No

Solar collectors need to be located in an unshaded area. Is the roof of the building and the south facing wall unshaded between the hours of 9 a.m. and 3 p.m.?
Roof: ☒ Yes ☐ No
South facing Wall: ☒ Yes ☐ No

If the roof or wall are partly shaded, what percentage of the surface is unshaded?
% of roof unshaded 90 %
% of south facing wall unshaded 50 %

What is the overall shape of the building?
☐ square ☒ rectangle ☐ H-shaped ☐ E-shaped ☐ other (specify) _____

Is the roof of the building flat or pitched?
☒ flat ☐ pitched

If pitched, what is the compass orientation of the ridgeline? _____

If pitched, what is the angle that the roof makes with horizontal? _____°

Are there large obstructions on the roof such as chimneys, rooms for mechanical equipment, ventilating units, water towers, etc?
☐ Yes ☒ No

What is the exterior facing material for the south facing wall? Block and brick

What percentage of the south facing wall is glass? 50 %

Is the building's space heating equipment located within or on the building? (A no answer indicates the equipment is in a separate building.)
☒ Yes ☐ No

If the space heating equipment is inside the building, where is it located?
☐ Ground Floor ☒ Basement ☐ Roof ☐ Other (specify) _____

Is the building's water heating equipment located within the building? (A no answer indicates the equipment is in a separate building.)
☒ Yes ☐ No

If the water heating equipment is inside the building, where is it located?
☐ Ground Floor ☒ Basement ☐ Other (specify) _____

Is the water heating system a central system, does it consist of multiple units, or is it a combination of the central and multiple units?
☒ Central ☐ Multiple ☐ Combination

I 20% SAVINGS DATA

Instructions: Enter the total energy used of each fuel type for the base period and the year when there was a 20% or greater energy savings. Indicate the unit of measure. Enter the appropriate conversion factor from Appendix B to convert energy usage into Btu's. Be sure to enter the fiscal years of which the data applies. Refer to pages 7 and 15 for a complete explanation of this section.

BASE PERIOD YEAR — Fiscal Year _____

ENERGY TYPE	ENERGY USAGE	CONVERSION FACTOR	BTU USAGE
Electricity			
Fuel 1			
Fuel 2			
TOTAL			

20% SAVINGS YEAR — Fiscal Year _____

ENERGY TYPE	ENERGY USAGE	CONVERSION FACTOR	BTU USAGE
Electricity			
Fuel 1			
Fuel 2			
TOTAL			

J SAVINGS ESTIMATION

Instructions: This section is to be completed by the mini-auditor after the walk-thru portion of the mini-audit. First, check the appropriate boxes which state the roughly estimated range of the percent of total electrical and fuel consumption which would be saved resulting from the implementation of all of the new mini-audit opportunities listed in section L. Secondly, calculate the range of energy and cost savings by multiplying the estimated percentages by the annual electrical and fuel consumption data on the energy report.

1 Check two boxes in each category —

Range of Electrical Savings — ☒ 0% ☒ 5% ☐ 10% ☐ 15% ☐ 20% ☐ 25% ☐ other (specify) _____

Range of Fuel Savings — ☐ 0% ☒ 5% ☒ 10% ☐ 15% ☐ 20% ☐ 25% ☐ other (specify) _____

2 Calculate ranges of energy and cost savings —

Range of Electrical Savings

	% Range		Annual Electrical Consumption		Range of Energy Savings	% Range		Annual Electrical Dollars Spent		Range of Electrical Dollars Savings
lower bound	0 %	x	268,480 kwh	=	0 kwh,	0 %	x	$10,915.28	=	$ 0
to upper bound	5 %	x	268,480 kwh	=	13,424 kwh,	5 %	x	$10,915.28	=	$ 545.76

3 **Range of Fuel Savings**

	% Range		Annual Fuel Consumption		Range of Fuel Savings	% Range		Annual Fuel Dollars Spent		Range of Fuel Dollars Savings
lower bound	5 %	x	2.293×10^9 Btu	=	1.15×10^8 Btu,	5 %	x	$ 5526.05	=	$ 276.30
to upper bound	10 %	x	2.293×10^9 Btu	=	2.293×10^8 Btu,	10 %	x	$ 5526.05	=	$ 552.61

The mini-auditor is not responsible if actual savings resulting from the implementation of the energy conservation opportunities listed in section I do not fall between the roughly estimated ranges which are specified.

K

Instructions: Read through the list of energy conservation opportunities provided. As you read through the items, list below those items which have already been undertaken in your facility. The description of the past energy conservation action should contain the specific building location where the recommendation applies, if applicable. Indicate the date of implementation of each item and its classification number. Energy conserving items which have been undertaken and are not on the list provided should also be included along with their appropriate classification numbers. The classification number should be taken from the classification scheme for energy conservation opportunities listed on pages 25 through 37. *This section of the mini-audit report should be completed by building personnel prior to the walk-through by the mini-auditor.*

ITEM NO.	CLASSIFICATION NO.		PAST ENERGY CONSERVATION ACTIONS	ENERGY SAVINGS	ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS		OPTIONAL:	OPTIONAL:	
1	3	1	Outside air closed off for unit			Summer 79.
			Ventilators in rooms			
2	2	10	Storm windows added			Summer 79.

Note: Reproduce this page as necessary

NEW OPPORTUNITIES

Instructions: Read through the energy conservation recommendation list provided. Then walk through the building with the list. Examine the suggested maintenance and operational changes, and any other low cost energy conservation measures, that pertain to the facility. As you go along, record the item number, the classification number of the recommendation, and the new mini-audit opportunity. The description of the mini-audit opportunity should contain the specific building location where the recommendation applies, if applicable. Any recommendation not found on the list may also be included. For those other recommendations, assign an appropriate classification number from the classification scheme for energy conservation opportunities listed on pages 25 through 37. The date of implementation should only be completed as the recommendation is implemented. *This section of the mini-audit report should be completed by the mini-audit team during the building walk-through.*

ITEM NO	CLASSIFICATION NO. MAJOR CLASS	CLASSIFICATION NO. SUB CLASS	NEW MINI-AUDIT OPPORTUNITIES	OPTIONAL: ENERGY SAVINGS	OPTIONAL: ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
1	1	1	Keep all controls free of dust.			
2	1	2	Lubricate motors to reduce wear and excessive torque.			
3	1	2	Keep motors clean to make cooling easier.			
4	1	2	Check power factors and make adjustments to correct equipment. Where it is impractical to replace motors which have low loads and power factors, use capacitors at motor terminals to correct the power factor to 90%			
5	1	5	Tighten and clean all electrical connections from the circuit breaker, back through the transformers, to the main switch gear. NOTE: Have this done at least once a year by a qualified electrician when the building power is shut off. This is not only a precaution but it can also reduce electrical losses.			
6	2	1	Check the amount of insulation in the ceiling and add if needed.			
7	2	2	Weatherstrip all exterior doors including garage or delivery doors.			
8	2	3	Clean Windows so more sunlight shines through them during the heating season.			
9	2	3	When the winter sun is not shining through the windows, draw the drapes or blinds to reduce effective heat losses.			
10	2	3	South and west facing windows should be fitted with solar shading devices (i.e. overhangs, fins, trellises, awnings, interior drapes) to reduce heat gain.			
11	2	7	Inspect the vestibule exterior and interior surfaces and seal all cracks.			
12	2	7	Insulate the vestibule walls and roof.			
13	2	8	Insulate walls with rigid insulation on inside and/or outside surfaces, or place loose fill insulation in wall cavities.			
14	2	9	Weatherstrip and caulk around door frames			
15	2	9	Weatherstrip and caulk around window frames.			
16	2	11	Replace windows on the north side of the building with insulation wall panels.			

Note 1: Date of Implementation should only be completed as the recommendation is implemented. The mini-audit report may be submitted to the Minnesota Energy Agency before the "Date of Implementation" has been completed.

Note 2: Reproduce this page as necessary.

L NEW OPPORTUNITIES

Instructions: Read through the energy conservation recommendation list provided. Then walk through the building with the list. Examine the suggested maintenance and operational changes, and any other low cost energy conservation measures, that pertain to the facility. As you go along, record the item number, the classification number of the recommendation, and the new mini-audit opportunity. The description of the mini-audit opportunity should contain the specific building location where the recommendation applies, if applicable. Any recommendation not found on the list may also be included. For those other recommendations, assign an appropriate classification number from the classification scheme for energy conservation opportunities listed on pages 25 through 37. The date of implementation should only be completed as the recommendation is implemented. *This section of the mini-audit report should be completed by the mini-audit team during the building walk-through.*

ITEM NO	CLASSIFICATION NO. MAJOR CLASS	CLASSIFICATION NO. SUB CLASS	NEW MINI-AUDIT OPPORTUNITIES	OPTIONAL: ENERGY SAVINGS	OPTIONAL: ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
17	2	11	Reduce amount of glass on other walls.			
18	3	1	Check operation of entire heating/ cooling control system, including control valves and dampers.			
19	3	1	Check the calibration of all controllers and devices for proper settings and operations.			
20	3	1	Adjust automatic timers or add time clocks to automatically set back temperature for night and weekend operation.			
21	3	1	Raise the chilled water temperature for colling to the highest point necessary to provide minimum required heating.			
22	3	1	Lower the hot water temperature for heating to the lowest point necessary to provide minimum required heating.			
23	3	1	Open windows in lieu of operating ventilating system for outdoor air cooling, when feasible. Be sure to consider acoustical, odor and dust conditions.			
24	3	1	Operate without fresh air ventilation when the building is unoccupied.			
25	3	1	Reduce the amount of infiltration and outdoor air ventilation to provide only the minimum required.			
26	3	1	Inspect outlet air filter system on controls of air compressor for proper removal of oil, moisture and dirt.			
27	3	2	Clean the air side of all direct radiators, fin tube convectors and coils to inhance heat transfer.			
28	3	3	Make sure that all fans, frequently inoperative in unit heaters, fan coil units, and unit ventilators are running normally to increase the heat transfer rate from heating coils.			
29	3	3	Keep condenser coil face clean to permit proper air flow.			

Note 1 Date of Implementation should only be completed as the recommendation is implemented. The mini-audit report may be submitted to the Minnesota Energy Agency before the "Date of Implementation" has been completed.

Note 2 Reproduce this page as necessary

NEW OPPORTUNITIES

Instructions: Read through the energy conservation recommendation list provided. Then walk through the building with the list. Examine the suggested maintenance and operational changes, and any other low cost energy conservation measures, that pertain to the facility. As you go along, record the item number, the classification number of the recommendation, and the new mini-audit opportunity. The description of the mini-audit opportunity should contain the specific building location where the recommendation applies, if applicable. Any recommendation not found on the list may also be included. For those other recommendations, assign an appropriate classification number from the classification scheme for energy conservation opportunities listed on pages 25 through 37. The date of implementation should only be completed as the recommendation is implemented. *This section of the mini-audit report should be completed by the mini-audit team during the building walk-through.*

ITEM NO	CLASSIFICATION NO. MAJOR CLASS	CLASSIFICATION NO. SUB CLASS	NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS OPTIONAL:	ENERGY COST SAVINGS OPTIONAL:	DATE OF IMPLEMENTATION
30	3	3	Check pumps for packing wear which can cause excessive leakage. Repack to avoid excessive water wastage and shaft erosion.			
31	3	3	Inspect strainers. Clean when required.			
32	3	3	Inspect damper blades and linkages. Clean, oil and adjust.			
33	3	3	Clean or replace filters periodically or when indicated by filter gauges. If there are no gauges, consider installing them.			
34	3	3	Clean transfer surface periodically inside and outside.			
35	4	1	Instruct occupants and maintenance personnel to switch off all lights when they are not needed.			
36	4	1	Consider variable level switches.			
37	4	2	In the winter, open blinds and drapes even if space mildly overheats.			
38	4	3	Clean fixtures and lamps regularly.			
39	4	3	Replace lamps in groups before they burn out to maintain higher average light output per fixture.			
40	4	4	Remove unnecessary lamps, fixtures, and ballasts.			
41	4	4	Use lower wattage lamps to provide the necessary illumination.			
42	5	1	Keep records of the operating schedule, monthly energy consumption and purchase of any new equipment that affects energy consumption of efficiency of the building. These records will indicate the impact of energy conservation measures.			
43	5	1	Review the record books on a regular basis.			
44	5	2	Establish a specific maintenance schedule for each building to ensure that all components of the specific building operate at maximum efficiency. Consult manufacturers literature for guidance in establishing a maintenance schedule.			

Note 1 Date of Implementation should only be completed as the recommendation is implemented. The mini-audit report may be submitted to the Minnesota Energy Agency before the "Date of Implementation" has been completed.

Note 2 Reproduce this page as necessary

L NEW OPPORTUNITIES

Instructions: Read through the energy conservation recommendation list provided. Then walk through the building with the list. Examine the suggested maintenance and operational changes, and any other low cost energy conservation measures, that pertain to the facility. As you go along, record the item number, the classification number of the recommendation, and the new mini-audit opportunity. The description of the mini-audit opportunity should contain the specific building location where the recommendation applies, if applicable. Any recommendation not found on the list may also be included. For those other recommendations, assign an appropriate classification number from the classification scheme for energy conservation opportunities listed on pages 25 through 37. The date of implementation should only be completed as the recommendation is implemented. *This section of the mini-audit report should be completed by the mini-audit team during the building walk-through.*

ITEM NO	CLASSIFICATION NO. MAJOR CLASS	CLASSIFICATION NO. SUB CLASS	NEW MINI-AUDIT OPPORTUNITIES	OPTIONAL: ENERGY SAVINGS	OPTIONAL: ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
45	6	1	Adjust water heater supply to 100°F for all except special requirements (dishwasher supply units, etc.).			
46	6	2	The burner system of fossil-fuel water heaters should be kept clean and in good operating condition.			
47	6	2	Periodically drain and remove the sediment from water heater.			
48	6	3	Turn off unused coffee pots and food warmers.			
49	6	6	Check sewage ejector float operation.			
50	7	3	Adjust oil burner efficiencies to proper stack temperature, CO_2 content and excess air settings. Adjust setting to a maximum of 400°-500°F of stack temperature and a minimum of 10% CO_2 at full load conditions. Excess air through a boiler can waste 10% to 30% of the fuel. Accurate testing is essential for the correct burner adjustment for maximum efficiency. Use appropriate instruments and test combustion as part of a planned general maintenance program.			
51	7	3	Check stack temperature and keep a weekly log. An increase in stack temperature usually means accumulations of soot or scale are reducing the rate of heat transfer.			
52	7	4	Maintain the lowest possible hot water temperature which will meet space or domestic hot water needs.			
53	7	8	Clean water chiller water-sides, remove built-up scale.			
54	7	8	Check water chiller with the feed-water treatment supplier or consultant to prevent scale formation. Carefully follow recommendations concerning amounts of methods of feed-water treatment and blowdown.			

Note 1 Date of Implementation should only be completed as the recommendation is implemented. The mini-audit report may be submitted to the Minnesota Energy Agency before the "Date of Implementation" has been completed.

Note 2 Reproduce this page as necessary.

MINI-AUDIT REPORT

FORM NO. MIN-01

A — CONTACT DATA

BUILDING NAME		NAME OF ORGANIZATION		DATE
Public Works Engineering		City of Bloomington		6-3-80
BUILDING ADDRESS		**ADDRESS**		
10000 Logan Avenue South		2215 West Old Shakopee Road		
CITY	**ZIP CODE**	**CITY**	**ZIP CODE**	
Bloomington, MN	55431	Bloomington, MN	55431	
PERSON COMPLETING FORM	**TELEPHONE**	**CONTACT PERSON**	**TELEPHONE**	
Paul Martinsen	(612) 935-6901	Arthur Jensen	(612) 881-5811	

B — BUILDING ELIGIBILITY CODE

Instructions: For blocks 1 and 2 check the box which best fits the building ownership conditions. For block 3 determine which of the four categories describes the building type and then within the category check off the sub category befitting the building function.

1. OWNERSHIP TYPE
   - [X] Public (PUB)
   - [ ] Non-Profit Association (NAP)

2. ULTIMATE OWNER
   - [ ] County (CNTY)
   - [X] City (CITY)
   - [ ] Township (TOWN)
   - [ ] State (STAT)
   - [ ] Public School (PUSC)
   - [ ] Private School (PRSC)
   - [ ] Non-Profit Association (NPAP)
   - [ ] Indian Tribe (INDN)

3a. SCHOOLS
   - [ ] Elementary (SCHL-ELM)
   - [ ] Secondary (SCHL-SECD)
   - [ ] Coll. or Univ. (SCHL-POST)
   - [ ] Vocational (SCHL-VOCL)
   - [ ] Education Agency (SCHL-ADMN)
   - [ ] Administration (SCHL-ADMN)
   - [ ] OTHER (SCHL-OTHR)

b. PUBLIC CARE
   - [ ] Nursing Home (PBCR-NURS)
   - [ ] Long Term Care (PBCR-TERM)
   - [ ] Rehab. Facility (PBCR-RHAB)
   - [ ] Public Health Ctr. (PBCR-HCTR)
   - [ ] Res. Child Care Ctr. (PBCR-RCCC)

c. LOCAL GOVERNMENT
   - [X] Office (LOCG-OFFC)
   - [ ] Storage (LOCG-STRG)
   - [X] Service (LOCG-SERV)
   - [ ] Library (LOCG-LBRY)
   - [ ] Police (LOCG-PLCE)
   - [ ] Fire (LOCG-FIRE)
   - [ ] OTHER (LOCG-OTHR)

d. HOSPITALS
   - [ ] General (HOSP-GENL)
   - [ ] Tuberculosis (HOSP-TUBR)
   - [ ] OTHER (HOSP-OTHR)

C — MINI-AUDIT FUNDING REQUEST

Instructions: With reference to page 23 entitled Funding Information, determine if the facilities are eligible for both Federal and State funding or just Federal funding. then answer the questions correctly for the situation. This section must be signed and dated by the head of the organization.

If eligible for both Federal and State Funding:
Have you received a mini-audit grant before? [ ] Yes [X] No
Have you previously applied for mini-audit funding? [X] Yes [ ] No
Do you wish to apply for mini-audit funding? [ ] Yes [X] No

Date: _____

Name: _____

Signature: _____

If eligible for Federal funding only:
Have you received a mini-audit grant before? [ ] Yes [ ] No
Have you previously applied for mini-audit funding? [ ] Yes [ ] No
Do you wish to apply for mini-audit funding? [ ] Yes [ ] No
The 50% match for Federal funds will come from: (Use additional sheets if necessary.)

Date: _____

Name: _____

Signature: _____

D ENERGY REPORT CHECK-OFF

Check the type of energy report which was completed and submitted prior to this mini-audit report.

- ☐ Elementary School Energy Report (Form No. ED-00444-02)
- ☐ Secondary School Energy Report (Form No. ED-00445-02)
- ☒ Existing Building Energy Report (Form No. EN-00041-01)

If an energy report has not been completed previous to this mini-audit report, one must be included with this report. Elementary, secondary, and vocational schools should use form ED-00444-02 or form ED-00445-02, depending on building complexity. All other buildings should use the existing building energy report, form EN-00041-01.

E MINI-AUDIT STATEMENTS

Instructions: This section is to be completed and signed by a registered professional engineer or by a certified mini-auditor who has successfully completed the State of Minnesota's Mini-Audit Procedures Course. This section should be completed after this mini-audit report and an energy report are completed. All blanks must be filled in.

I have reviewed the energy report and/or the energy report results for this building. I found all information contained therein to be correct *OR* I have corrected any misinformation on the energy report which will be resubmitted with this mini-audit report to the Minnesota Energy Agency.

I am not directly responsible for the day to day operations of this building being audited.

I have fully disclosed my financial interests relating to this mini-audit and any energy conservation measures considered by this audit.

I have walked through this building and have found the recommendations listed in section I of this mini-audit report to be the operations and maintenance changes, and low cost energy conservation measures, which would reduce energy consumption in this building.

I have made a rough estimate, in section G, of the range of savings which may result from the implementation of all of the mini-audit opportunities listed in section I. I am not responsible if the actual savings resulting from this mini-audit do not fall within the estimated range.

Based on actual records, the energy conservation operating and maintenance procedures listed in section K did not (did, did not) save at least 20% of the building's energy consumption as specified in section I.

Based upon my observation of the physical characteristics of this building and the building's major energy using systems, I recommend that this should (should, should not) be the subject of a maxi-audit.
I realize that this is not a final judgement, that the State reserves the right to make the maxi-audit funding determination based on this mini-audit report and other criteria.

Based upon the information in section E and the information referred to in section F, I recommend that this building should not (should, should not) undergo further solar conversion analysis, and/or should not (should, should not) undergo further analysis of the renewable resources — waste, wind, wood. (Circle proper resources)

In my judgement, as a mini-auditor, all of the above statements are true and correct.

Paul Martinsen P.E. 9597
Mini-Auditor's Name (Print or Type)

Paul B. Martinsen
Signature

Rieke Carroll Muller Associates, Inc.
Firm Name (if none, enter none)

P.O. Box 130 Hopkins, MN 55343
Address

(612) 935-6901
Phone

6-3-80
Date

Witnessed by:

Building Organizational Authority (Print or Type)

Signature

Date

F AUDIT TEAM

NAME	POSITION	ORGANIZATION
Paul Martinsen	Mechanical Engineer	Rieke Carroll Muller Assoc., Inc.
Reinert Ege	Maintenance Engineer	City of Bloomington

G BUILDING INFORMATION

BRIEF DESCRIPTION OF GENERAL BUILDING CONDITION (i.e. type, and function)
Good - Office

MAJOR CHANGES PLANNED WITHIN NEXT 15 YEARS (i.e. demolition, rehabilitation, conversion from one building type to another)
Rehabilitation - Building being remodeled.

STRUCTURAL COMPONENTS OF ROOF (i.e. metal beams, wooden rafters, concrete)
Bar Joists

ROOFING MATERIAL (i.e. tar and gravel, shingles, tile)
Tar and Gravel.

H SOLAR POTENTIAL INFORMATION

INSTRUCTIONS: Correctly answer the following questions for the building being mini-audited.

Is there open land adjacent to the building?
☐ Yes ☒ No

Solar collectors need to be located in an unshaded area. Is the roof of the building and the south facing wall unshaded between the hours of 9 a.m. and 3 p.m.?
Roof: ☒ Yes ☐ No
South facing Wall: ☐ Yes ☒ No

If the roof or wall are partly shaded, what percentage of the surface is unshaded?
% of roof unshaded _____ %
% of south facing wall unshaded _____ %

What is the overall shape of the building?
☐ square ☒ rectangle ☐ H-shaped ☐ E-shaped ☐ other (specify) _____

Is the roof of the building flat or pitched?
☒ flat ☐ pitched

If pitched, what is the compass orientation of the ridgeline? _____

If pitched, what is the angle that the roof makes with horizontal? _____°

Are there large obstructions on the roof such as chimneys, rooms for mechanical equipment, ventilating units, water towers, etc?
☐ Yes ☒ No

What is the exterior facing material for the south facing wall? Brick

What percentage of the south facing wall is glass? 50 %

Is the building's space heating equipment located within or on the building? (A no answer indicates the equipment is in a separate building.)
☒ Yes ☐ No

If the space heating equipment is inside the building, where is it located?
☒ Ground Floor ☐ Basement ☐ Roof ☐ Other (specify) _____

Is the building's water heating equipment located within the building? (A no answer indicates the equipment is in a separate building.)
☒ Yes ☐ No

If the water heating equipment is inside the building, where is it located?
☒ Ground Floor ☐ Basement ☐ Other (specify) _____

Is the water heating system a central system, does it consist of multiple units, or is it a combination of the central and multiple units?
☒ Central ☐ Multiple ☐ Combination

I — 20% SAVINGS DATA

Instructions: Enter the total energy used of each fuel type for the base period and the year when there was a 20% or greater energy savings. Indicate the unit of measure. Enter the appropriate conversion factor from Appendix B to convert energy usage into Btu's. Be sure to enter the fiscal years of which the data applies. Refer to pages 7 and 15 for a complete explanation of this section.

BASE PERIOD YEAR — Fiscal Year _____

ENERGY TYPE	ENERGY USAGE	CONVERSION FACTOR	BTU USAGE
Electricity			
Fuel 1			
Fuel 2			
TOTAL			

20% SAVINGS YEAR — Fiscal Year _____

ENERGY TYPE	ENERGY USAGE	CONVERSION FACTOR	BTU USAGE
Electricity			
Fuel 1			
Fuel 2			
TOTAL			

J — SAVINGS ESTIMATION

Instructions: This section is to be completed by the mini-auditor after the walk-thru portion of the mini-audit. First, check the appropriate boxes which state the roughly estimated range of the percent of total electrical and fuel consumption which would be saved resulting from the implementation of all of the new mini-audit opportunities listed in section L. Secondly, calculate the range of energy and cost savings by multiplying the estimated percentages by the annual electrical and fuel consumption data on the energy report.

1 Check two boxes in each category —

Range of Electrical Savings — ☒ 0% ☒ 5% ☐ 10% ☐ 15% ☐ 20% ☐ 25% ☐ other (specify) _____

Range of Fuel Savings — ☐ 0% ☒ 5% ☒ 10% ☐ 15% ☐ 20% ☐ 25% ☐ other (specify) _____

2 Calculate ranges of energy and cost savings —

Range of Electrical Savings

	% Range		Annual Electrical Consumption		Range of Energy Savings	% Range		Annual Electrical Dollars Spent		Range of Electrical Dollars Savings
lower bound	0 %	x	138,680 kwh	=	0 kwh,	0 %	x	$5364.31	=	$ 0
to upper bound	5 %	x	138,680 kwh	=	6934 kwh,	5 %	x	$5364.31	=	$ 268.22

3 **Range of Fuel Savings**

	% Range		Annual Fuel Consumption		Range of Fuel Savings	% Range		Annual Fuel Dollars Spent		Range of Fuel Dollars Savings
lower bound	5 %	x	9.7×10^8 Btu	=	4.9×10^7 Btu,	5 %	x	$2491.97	=	$ 124.60
to upper bound	10 %	x	9.7×10^8 Btu	=	9.7×10^7 Btu,	10 %	x	$2491.97	=	$ 249.20

The mini-auditor is not responsible if actual savings resulting from the implementation of the energy conservation opportunities listed in section I do not fall between the roughly estimated ranges which are specified.

K

Instructions: Read through the list of energy conservation opportunities provided. As you read through the items, list below those items which have already been undertaken in your facility. The description of the past energy conservation action should contain the specific building location where the recommendation applies, if applicable. Indicate the date of implementation of each item and its classification number. Energy conserving items which have been undertaken and are not on the list provided should also be included along with their appropriate classification numbers. The classification number should be taken from the classification scheme for energy conservation opportunities listed on pages 25 through 37. *This section of the mini-audit report should be completed by building personnel prior to the walk-through by the mini-auditor.*

OPTIONAL: OPTIONAL:

ITEM NO.	CLASSIFICATION NO.		PAST ENERGY CONSERVATION ACTIONS	ENERGY SAVINGS	ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS				

Note Reproduce this page as necessary

NEW OPPORTUNITIES

Instructions: Read through the energy conservation recommendation list provided. Then walk through the building with the list. Examine the suggested maintenance and operational changes, and any other low cost energy conservation measures, that pertain to the facility. As you go along, record the item number, the classification number of the recommendation, and the new mini-audit opportunity. The description of the mini-audit opportunity should contain the specific building location where the recommendation applies, if applicable. Any recommendation not found on the list may also be included. For those other recommendations, assign an appropriate classification number from the classification scheme for energy conservation opportunities listed on pages 25 through 37. The date of implementation should only be completed as the recommendation is implemented. *This section of the mini-audit report should be completed by the mini-audit team during the building walk-through.*

ITEM NO	CLASSIFICATION NO. MAJOR CLASS	CLASSIFICATION NO. SUB CLASS	NEW MINI-AUDIT OPPORTUNITIES	OPTIONAL: ENERGY SAVINGS	OPTIONAL: ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
1	1	1	Keep all controls free of dust.			
2	1	2	Lubricate motors to reduce wear and excessive torque.			
3	1	2	Keep motors clean to make cooling easier.			
4	1	2	Where it is impractical to replace motors which have low loads and power factors, use capacitors at motor terminals to correct the power factor to 90%.			
5	2	1	Check the amount of insulation in the ceiling and add if required.			
6	2	2	Weatherstrip all exterior doors including garage or delivery doors.			
7	2	3	Clean windows so more sunlight shines through them during the heating season.			
8	2	3	When the winter sun is not shining through the windows, draw the drapes or blinds to reduce effective heat losses.			
9	2	6	Insulate the roof areas.			
10	2	7	Inspect the vestibule exterior and interior surfaces and seal all cracks.			
11	2	7	Insulate the vestibule walls and roof.			
12	2	8	Insulate walls with rigid insulation on inside and/or outside surfaces, or place loose fill insulation in wall cavities.			
13	2	9	Weatherstrip and caulk around door frames.			
14	2	9	Weatherstrip and caulk around window frames.			
15	2	11	Replace windows on the north side of the building with insulation wall panels.			
16	3	1	Check operation of entire heating/cooling control system, including control valves and dampers.			
17	3	1	Check the calibration of all controllers and devices for proper settings and operations.			
18	3	1	Adjust automatic timers or add time clocks to automatically set back			

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NEW OPPORTUNITIES

Instructions: Read through the energy conservation recommendation list provided. Then walk through the building with the list. Examine the suggested maintenance and operational changes, and any other low cost energy conservation measures, that pertain to the facility. As you go along, record the item number, the classification number of the recommendation, and the new mini-audit opportunity. The description of the mini-audit opportunity should contain the specific building location where the recommendation applies, if applicable. Any recommendation not found on the list may also be included. For those other recommendations, assign an appropriate classification number from the classification scheme for energy conservation opportunities listed on pages 25 through 37. The date of implementation should only be completed as the recommendation is implemented. *This section of the mini-audit report should be completed by the mini-audit team during the building walk-through.*

ITEM NO	CLASSIFICATION NO. MAJOR CLASS	CLASSIFICATION NO. SUB CLASS	NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS OPTIONAL:	ENERGY COST SAVINGS OPTIONAL:	DATE OF IMPLEMENTATION
			temperature for night and weekend operation.			
19	3	1	Raise the supply air temperature for cooling to the highest point necessary to provide minimum required cooling.			
20	3	1	Lower the supply air temperature for heating to the lowest point necessary to provide minimum required heating.			
21	3	2	Clean and remove obstructions from all room air outlets and inlets (diffusers, registers and grilles). They should be kept clean and free of all dirt and foreign materials.			
22	3	3	Inspect drive belts. Adjust or replace as necessary to ensure proper operation.			
23	3	3	Keep condensing unit coil face clean to permit proper air flow.			
24	3	3	Inspect ductwork for air leakage. Seal all leaks by taping or caulking.			
25	3	3	Inspect ductwork insulation.			
26	3	3	Inspect damper blades and linkages. Clean, oil and adjust.			
27	3	3	Clean or replace filters periodically.			
28	4	1	Instruct occupants and maintenance personnel to switch off all lights when they are not needed.			
29	4	1	Consider variable level switches.			
30	4	3	Clean fixtures and lamps regularly.			
31	4	3	Replace lamps in groups before they burn out to maintain higher average light output per fixture.			
32	4	3	When repainting, use light colored paint on ceilings, walls and floors but avoid objectionable specular reflections from glass finishes.			
33	4	4	Remove unnecessary lamps, fixtures, and ballasts.			
34	4	4	Use lower wattage lamps to provide the necessary illumination.			

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L NEW OPPORTUNITIES

Instructions: Read through the energy conservation recommendation list provided. Then walk through the building with the list. Examine the suggested maintenance and operational changes, and any other low cost energy conservation measures, that pertain to the facility. As you go along, record the item number, the classification number of the recommendation, and the new mini-audit opportunity. The description of the mini-audit opportunity should contain the specific building location where the recommendation applies, if applicable. Any recommendation not found on the list may also be included. For those other recommendations, assign an appropriate classification number from the classification scheme for energy conservation opportunities listed on pages 25 through 37. The date of implementation should only be completed as the recommendation is implemented. *This section of the mini-audit report should be completed by the mini-audit team during the building walk-through.*

ITEM NO	CLASSIFICATION NO. MAJOR CLASS	CLASSIFICATION NO. SUB CLASS	NEW MINI-AUDIT OPPORTUNITIES	OPTIONAL: ENERGY SAVINGS	OPTIONAL: ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
35	4	4	Allow part of a lighting system to be turned off, while maintaining the necessary light.			
36	4	5	Rearrange lighting fixtures for task localized use.			
37	4	5	Direct security lighting where it is most required, such as at windows and entrances and reduce it where the security problems are minimal.			
38	5	1	Keep records of the operating schedule monthly energy consumption and purchase of any new equipment that affects energy consumption of efficiency of the building. These records will indicate the impact of energy conservation measures.			
39	5	1	Review the record books on a regular basis.			
40	5	2	Establish a specific maintenance schedule for each building to ensure that all components of the specific building operate at maximum efficiency. Consult manufacturers literature for guidance in establishing a maintenance schedule.			
41	6	1	Adjust domestic water supply to 100°F for all except special requirements (dishwasher supply units, etc.).			
42	6	2	All electric heating equipment should be checked for corroded elements and loose connections and repaired as required.			
43	6	2	Periodically drain and remove the sediment from the water heater.			
44	6	5	Install toilet flush valve kits that reduce water usage.			
45	6	5	Install flow restrictors.			
46	7	3	Clean air-sides, remove soot, and scrape scale in forced warm air and hot air furnaces.			
47	7	4	Operate exhaust fans only during occupied periods.			

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Note 2 Reproduce this page as necessary

MINI-AUDIT REPORT

FORM NO. MIN-01

A — CONTACT DATA

BUILDING NAME		NAME OF ORGANIZATION		DATE
Public Works Garage		City of Bloomington		6-3-80
BUILDING ADDRESS		**ADDRESS**		
9930 Logan Avenue South		2215 West Old Shakopee Road		
CITY	**ZIP CODE**	**CITY**	**ZIP CODE**	
Bloomington, MN	55431	Bloomington, MN	55431	
PERSON COMPLETING FORM	**TELEPHONE**	**CONTACT PERSON**	**TELEPHONE**	
Paul Martinsen	(612) 935-6901	Arthur Jensen	(612) 881-5811	

B — BUILDING ELIGIBILITY CODE

Instructions: For blocks 1 and 2 check the box which best fits the building ownership conditions. For block 3 determine which of the four categories describes the building type and then within the category check off the sub category befitting the building function.

1. OWNERSHIP TYPE
   - [X] Public (PUB)
   - [ ] Non-Profit Association (NAP)

2. ULTIMATE OWNER
   - [ ] County (CNTY)
   - [X] City (CITY)
   - [ ] Township (TOWN)
   - [ ] State (STAT)
   - [ ] Public School (PUSC)
   - [ ] Private School (PRSC)
   - [ ] Non-Profit Association (NPAP)
   - [ ] Indian Tribe (INDN)

3a. SCHOOLS
   - [ ] Elementary (SCHL-ELM)
   - [ ] Secondary (SCHL-SECD)
   - [ ] Coll. or Univ. (SCHL-POST)
   - [ ] Vocational (SCHL-VOCL)
   - [ ] Education Agency (SCHL-ADMN)
   - [ ] Administration (SCHL-ADMN)
   - [ ] OTHER (SCHL-OTHR)

b. PUBLIC CARE
   - [ ] Nursing Home (PBCR-NURS)
   - [ ] Long Term Care (PBCR-TERM)
   - [ ] Rehab. Facility (PBCR-RHAB)
   - [ ] Public Health Ctr. (PBCR-HCTR)
   - [ ] Res. Child Care Ctr. (PBCR-RCCC)

c. LOCAL GOVERNMENT
   - [ ] Office (LOCG-OFFC)
   - [ ] Storage (LOCG-STRG)
   - [X] Service (LOCG-SERV)
   - [ ] Library (LOCG-LBRY)
   - [ ] Police (LOCG-PLCE)
   - [ ] Fire (LOCG-FIRE)
   - [ ] OTHER (LOCG-OTHR)

d. HOSPITALS
   - [ ] General (HOSP-GENL)
   - [ ] Tuberculosis (HOSP-TUBR)
   - [ ] OTHER (HOSP-OTHR)

C — MINI-AUDIT FUNDING REQUEST

Instructions: With reference to page 23 entitled Funding Information, determine if the facilities are eligible for both Federal and State funding or just Federal funding. then answer the questions correctly for the situation. This section must be signed and dated by the head of the organization.

If eligible for both Federal and State Funding:
Have you received a mini-audit grant before? [ ] Yes [X] No
Have you previously applied for mini-audit funding? [X] Yes [ ] No
Do you wish to apply for mini-audit funding? [ ] Yes [X] No

Date: _____

Name: _____

Signature: _____

If eligible for Federal funding only:
Have you received a mini-audit grant before? [ ] Yes [ ] No
Have you previously applied for mini-audit funding? [ ] Yes [ ] No
Do you wish to apply for mini-audit funding? [ ] Yes [ ] No
The 50% match for Federal funds will come from: (Use additional sheets if necessary.)

Date: _____

Name: _____

Signature: _____

D ENERGY REPORT CHECK-OFF

Check the type of energy report which was completed and submitted prior to this mini-audit report.

☐ Elementary School Energy Report (Form No. ED-00444-02)
☐ Secondary School Energy Report (Form No. ED-00445-02)
☒ Existing Building Energy Report (Form No. EN-00041-01)

If an energy report has not been completed previous to this mini-audit report, one must be included with this report. Elementary, secondary, and vocational schools should use form ED-00444-02 or form ED-00445-02, depending on building complexity. All other buildings should use the existing building energy report, form EN-00041-01.

E MINI-AUDIT STATEMENTS

Instructions: This section is to be completed and signed by a registered professional engineer or by a certified mini-auditor who has successfully completed the State of Minnesota's Mini-Audit Procedures Course. This section should be completed after this mini-audit report and an energy report are completed. All blanks must be filled in.

I have reviewed the energy report and/or the energy report results for this building. I found all information contained therein to be correct *OR* I have corrected any misinformation on the energy report which will be resubmitted with this mini-audit report to the Minnesota Energy Agency.

I am not directly responsible for the day to day operations of this building being audited.

I have fully disclosed my financial interests relating to this mini-audit and any energy conservation measures considered by this audit.

I have walked through this building and have found the recommendations listed in section I of this mini-audit report to be the operations and maintenance changes, and low cost energy conservation measures, which would reduce energy consumption in this building.

I have made a rough estimate, in section G, of the range of savings which may result from the implementation of all of the mini-audit opportunities listed in section I. I am not responsible if the actual savings resulting from this mini-audit do not fall within the estimated range.

Based on actual records, the energy conservation operating and maintenance procedures listed in section K did not (did, did not) save at least 20% of the building's energy consumption as specified in section I.

Based upon my observation of the physical characteristics of this building and the building's major energy using systems, I recommend that this should (should, should not) be the subject of a maxi-audit.
I realize that this is not a final judgement, that the State reserves the right to make the maxi-audit funding determination based on this mini-audit report and other criteria.

Based upon the information in section E and the information referred to in section F, I recommend that this building should not (should, should not) undergo further solar conversion analysis, and/or should not (should, should not) undergo further analysis of the renewable resources — waste, wind, wood. (Circle proper resources)

In my judgement, as a mini-auditor, all of the above statements are true and correct.

Paul Martinsen P.E. 9597
Mini-Auditor's Name (Print or Type)

Paul B. Martinsen
Signature

Rieke Carroll Muller Assoc., Inc.
Firm Name (if none, enter none)

P.O. Box 130 Hopkins, MN 55343
Address

(612) 935-6901
Phone

6-3-80
Date

Witnessed by:

Building Organizational Authority (Print or Type)

Signature

Date

F AUDIT TEAM

NAME	POSITION	ORGANIZATION
Paul Martinsen	Mechanical Engineer	Rieke Carroll Muller Assoc.
Reinert Ege	Maintenance Engineer	City of Bloomington

G BUILDING INFORMATION

BRIEF DESCRIPTION OF GENERAL BUILDING CONDITION (i.e. type, and function)
Good - Maintainence Garage

MAJOR CHANGES PLANNED WITHIN NEXT 15 YEARS (i.e. demolition, rehabilitation, conversion from one building type to another)
One half will be remodled within one year

STRUCTURAL COMPONENTS OF ROOF (i.e. metal beams, wooden rafters, concrete)
Bar Joist

ROOFING MATERIAL (i.e. tar and gravel, shingles, tile)
Tar and Gravel

H SOLAR POTENTIAL INFORMATION

INSTRUCTIONS: Correctly answer the following questions for the building being mini-audited.

Is there open land adjacent to the building?
☐ Yes ☒ No

Solar collectors need to be located in an unshaded area. Is the roof of the building and the south facing wall unshaded between the hours of 9 a.m. and 3 p.m.?
Roof: ☐ Yes ☒ No
South facing Wall: ☐ Yes ☒ No

If the roof or wall are partly shaded, what percentage of the surface is unshaded?
% of roof unshaded 90 %
% of south facing wall unshaded 90 %

What is the overall shape of the building?
☐ square ☒ rectangle ☐ H-shaped ☐ E-shaped ☐ other (specify) _____

Is the roof of the building flat or pitched?
☒ flat ☐ pitched

If pitched, what is the compass orientation of the ridgeline? _____

If pitched, what is the angle that the roof makes with horizontal? _____°

Are there large obstructions on the roof such as chimneys, rooms for mechanical equipment, ventilating units, water towers, etc?
☐ Yes ☒ No

What is the exterior facing material for the south facing wall? Garage doors

What percentage of the south facing wall is glass? 20 %

Is the building's space heating equipment located within or on the building? (A no answer indicates the equipment is in a separate building.)
☒ Yes ☐ No

If the space heating equipment is inside the building, where is it located?
☒ Ground Floor ☐ Basement ☐ Roof ☐ Other (specify) _____

Is the building's water heating equipment located within the building? (A no answer indicates the equipment is in a separate building.)
☒ Yes ☐ No

If the water heating equipment is inside the building, where is it located?
☒ Ground Floor ☐ Basement ☐ Other (specify) _____

Is the water heating system a central system, does it consist of multiple units, or is it a combination of the central and multiple units?
☒ Central ☐ Multiple ☐ Combination

I — 20% SAVINGS DATA

Instructions: Enter the total energy used of each fuel type for the base period and the year when there was a 20% or greater energy savings. Indicate the unit of measure. Enter the appropriate conversion factor from Appendix B to convert energy usage into Btu's. Be sure to enter the fiscal years of which the data applies. Refer to pages 7 and 15 for a complete explanation of this section.

BASE PERIOD YEAR — Fiscal Year _____

ENERGY TYPE	ENERGY USAGE	CONVERSION FACTOR	BTU USAGE
Electricity			
Fuel 1			
Fuel 2			
TOTAL			

20% SAVINGS YEAR — Fiscal Year _____

ENERGY TYPE	ENERGY USAGE	CONVERSION FACTOR	BTU USAGE
Electricity			
Fuel 1			
Fuel 2			
TOTAL			

J — SAVINGS ESTIMATION

Instructions: This section is to be completed by the mini-auditor after the walk-thru portion of the mini-audit. First, check the appropriate boxes which state the roughly estimated range of the percent of total electrical and fuel consumption which would be saved resulting from the implementation of all of the new mini-audit opportunities listed in section L. Secondly, calculate the range of energy and cost savings by multiplying the estimated percentages by the annual electrical and fuel consumption data on the energy report.

1

Check two boxes in each category —

Range of Electrical Savings — ☒ 0% ☒ 5% ☐ 10% ☐ 15% ☐ 20% ☐ 25% ☐ other (specify) _____

Range of Fuel Savings — ☐ 0% ☒ 5% ☒ 10% ☐ 15% ☐ 20% ☐ 25% ☐ other (specify) _____

2

Calculate ranges of energy and cost savings —

Range of Electrical Savings

	% Range		Annual Electrical Consumption		Range of Energy Savings	% Range		Annual Electrical Dollars Spent		Range of Electrical Dollars Savings
lower bound	0 %	x	224,640 kwh	=	0 kwh,	0 %	x	$ 8066.45	=	$ 0
to					to	to				to
upper bound	5 %	x	224,640 kwh	=	11,232 kwh,	5 %	x	$ 8066.45	=	$ 403.32

3

Range of Fuel Savings

	% Range		Annual Fuel Consumption		Range of Fuel Savings	% Range		Annual Fuel Dollars Spent		Range of Fuel Dollars Savings
lower bound	5 %	x	4.2×10^9 Btu	=	2.1×10^8 Btu,	5 %	x	$ 10,571.75	=	$ 528.59
to					to	to				to
upper bound	10 %	x	4.2×10^9 Btu	=	4.2×10^8 Btu,	10 %	x	$ 10,571.75	=	$ 1,057.18

The mini-auditor is not responsible if actual savings resulting from the implementation of the energy conservation opportunities listed in section I do not fall between the roughly estimated ranges which are specified.

K

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ITEM NO.	CLASSIFICATION NO.		PAST ENERGY CONSERVATION ACTIONS	ENERGY SAVINGS	ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS		OPTIONAL:	OPTIONAL:	

Note Reproduce this page as necessary

NEW OPPORTUNITIES

Instructions: Read through the energy conservation recommendation list provided. Then walk through the building with the list. Examine the suggested maintenance and operational changes, and any other low cost energy conservation measures, that pertain to the facility. As you go along, record the item number, the classification number of the recommendation, and the new mini-audit opportunity. The description of the mini-audit opportunity should contain the specific building location where the recommendation applies, if applicable. Any recommendation not found on the list may also be included. For those other recommendations, assign an appropriate classification number from the classification scheme for energy conservation opportunities listed on pages 25 through 37. The date of implementation should only be completed as the recommendation is implemented. *This section of the mini-audit report should be completed by the mini-audit team during the building walk-through.*

ITEM NO	CLASSIFICATION NO.		NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS OPTIONAL:	ENERGY COST SAVINGS OPTIONAL:	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS				
1	1	1	Keep all controls free of dust.			
2	1	2	Lubricate motors to reduce wear and excessive torque.			
3	1	2	Keep motors clean to make cooling easier.			
4	1	2	Where it is impractical to replace motors which have low loads and			
			power factors, use capacitors at motor terminals to correct the			
			power factor to 90%.			
5	2	1	Check the amount of insulation in the ceiling and add if required.			
6	2	2	Weatherstrip all exterior doors including garage or delivery doors.			
7	2	2	Replace an existing doors with one of higher R- value.			
8	2	6	Insulate the roof areas.			
9	2	8	Insulate walls with rigid insulation on inside and/or outside surfaces, or			
			place loose fill insulation in wall cavities.			
10	2	9	Weatherstrip and caulk around door frames.			
11	2	9	Weatherstrip and caulk around window frames.			
12	2	10	Replace single glazed windows with double glazed thermopanes.			
13	3	1	Check operation of entire heating/ cooling control system, including			
			control valves and dampers.			
14	3	1	Check the calibration of all controllers and devices for proper settings and			
			operations.			
15	3	1	Adjust automatic timers or add time clocks to automatically set back			
			temperature for night and weekend operation.			
16	3	1	Raise the supply air temperature for cooling to the highest point			
			necessary to provide minimum required cooling.			
17	3	1	Lower the supply air temperature for heating to the lowest point			
			necessary to provide minimum required heating.			

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ITEM NO	CLASSIFICATION NO. MAJOR CLASS	CLASSIFICATION NO. SUB CLASS	NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS OPTIONAL:	ENERGY COST SAVINGS OPTIONAL:	DATE OF IMPLEMENTATION
18	3	2	Clean and remove obstructions from all room air outlets and inlets (diffusers, registers and grillers). They should be kept clean and free of all dirt and foreign materials.			
19	3	3	Inspect drive belts. Adjust or replace as necessary to ensure proper operation.			
20	3	3	Keep condensing unit coil face clean to permit proper air flow.			
21	3	3	Inspect ductwork for air leakage. Seal all leaks by taping or caulking.			
22	3	3	Inspect ductwork insulation.			
23	3	3	Clean or replace filters periodically.			
24	3	3	Check compressor belt tension and alignment.			
25	3	3	Inspect air compressor intake filter pads and clean or replace as necessary.			
26	3	3	Check the compressor's oil level.			
27	3	3	Periodically drain the moisture from storage tank of the compressor.			
28	3	3	Clean evaporator and condenser coils of window air conditioner.			
29	4	1	Instruct occupants and maintenance personnel to switch off all lights when they are not needed.			
30	4	2	Clean windows and skylights.			
31	4	3	Clean fixtures and lamps regularly.			
32	4	3	Replace lamps in groups before they burn out to maintain higher average light output per fixture.			
33	4	3	When repainting, use light colored paint on ceilings, walls, and floors but avoid objectionable specular reflections from glass finishes.			
34	4	4	Remove unnecessary lamps, fixtures, and ballasts.			
35	4	4	Use lower wattage lamps to provide necessary illumination.			

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L NEW OPPORTUNITIES

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ITEM NO	CLASSIFICATION NO. MAJOR CLASS	CLASSIFICATION NO. SUB CLASS	NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS OPTIONAL:	ENERGY COST SAVINGS OPTIONAL:	DATE OF IMPLEMENTATION
36	4	4	Allow part of a lighting system to be turned off while maintaining the necessary light.			
37	4	5	Rearrange lighting fixtures for task localized use. Maintain hazard and exit lighting at all times as required by building and fire codes.			
38	4	5	Direct security lighting where it is most required, such as at windows and entrances and reduce it where the security problems are minimal.			
39	5	1	Keep records of the operating schedule monthly energy consumption and purchase of any new equipment that affects energy consumption of efficiency of the building. These records will indicate the impact of energy conservation measures.			
40	5	1	Review the record books on a regular basis.			
41	5	2	Establish a specific maintenance schedule for each building to ensure that all components of the specific building operate at maximum efficiency. Consult manufacturers literature for guidance in establishing a maintenance schedule.			
42	6	1	Adjust domestic water supply to 100°F for all except special requirements (dishwasher supply units, etc.).			
43	6	2	The burner system of fossil-fuel water heaters should be kept clean and in good operating condition.			
44	6	2	Periodically drain and remove the sediment from the water heater.			
45	6	5	Install toilet flush valve kits that reduce water usage.			
46	6	5	Install flow restrictors.			
47	7	3	Clean air-sides, remove soot, and scrape scale in forced warm air and hot air furnaces.			
48	7	4	Turn off gas pilots for furnaces, boilers, and space heaters during			

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Note 2 Reproduce this page as necessary

NEW OPPORTUNITIES

Instructions: Read through the energy conservation recommendation list provided. Then walk through the building with the list. Examine the suggested maintenance and operational changes, and any other low cost energy conservation measures, that pertain to the facility. As you go along, record the item number, the classification number of the recommendation, and the new mini-audit opportunity. The description of the mini-audit opportunity should contain the specific building location where the recommendation applies, if applicable. Any recommendation not found on the list may also be included. For those other recommendations, assign an appropriate classification number from the classification scheme for energy conservation opportunities listed on pages 25 through 37. The date of implementation should only be completed as the recommendation is implemented. *This section of the mini-audit report should be completed by the mini-audit team during the building walk-through.*

OPTIONAL: OPTIONAL:

ITEM NO	CLASSIFICATION NO. MAJOR CLASS	CLASSIFICATION NO. SUB CLASS	NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS	ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
			the non-heating months and during long unoccupied periods.			
49	7	4	Keep all heat exchanger surfaces clean Check air-to-fuel ratio and adjust as necessary.			

Note 1 Date of Implementation should only be completed as the recommendation is implemented. The mini-audit report may be submitted to the Minnesota Energy Agency before the "Date of Implementation" has been completed.

Note 2 Reproduce this page as necessary

MINI-AUDIT REPORT

FORM NO. MIN-01

A — CONTACT DATA

BUILDING NAME	NAME OF ORGANIZATION	DATE
Public Works - Western Maint. Garage	City of Bloomington	6-3-80

BUILDING ADDRESS	ADDRESS
10500 Hampshire Avenue South	2215 West Old Shakopee Road

CITY	ZIP CODE	CITY	ZIP CODE
Bloomington, MN	55431	Bloomington, MN	55431

PERSON COMPLETING FORM	TELEPHONE	CONTACT PERSON	TELEPHONE
Paul Martinsen	(612) 935-6901	Arthur Jensen	(612) 881-5811

B — BUILDING ELIGIBILITY CODE

Instructions: For blocks 1 and 2 check the box which best fits the building ownership conditions. For block 3 determine which of the four categories describes the building type and then within the category check off the sub category befitting the building function.

1. OWNERSHIP TYPE
   - [X] Public (PUB)
   - [ ] Non-Profit Association (NAP)

2. ULTIMATE OWNER
   - [ ] County (CNTY)
   - [X] City (CITY)
   - [ ] Township (TOWN)
   - [ ] State (STAT)
   - [ ] Public School (PUSC)
   - [ ] Private School (PRSC)
   - [ ] Non-Profit Association (NPAP)
   - [ ] Indian Tribe (INDN)

3a. SCHOOLS
   - [ ] Elementary (SCHL-ELM)
   - [ ] Secondary (SCHL-SECD)
   - [ ] Coll. or Univ. (SCHL-POST)
   - [ ] Vocational (SCHL-VOCL)
   - [ ] Education Agency (SCHL-ADMN)
   - [ ] Administration (SCHL-ADMN)
   - [ ] OTHER (SCHL-OTHR)

b. PUBLIC CARE
   - [ ] Nursing Home (PBCR-NURS)
   - [ ] Long Term Care (PBCR-TERM)
   - [ ] Rehab. Facility (PBCR-RHAB)
   - [ ] Public Health Ctr. (PBCR-HCTR)
   - [ ] Res. Child Care Ctr. (PBCR-RCCC)

c. LOCAL GOVERNMENT
   - [ ] Office (LOCG-OFFC)
   - [ ] Storage (LOCG-STRG)
   - [X] Service (LOCG-SERV)
   - [ ] Library (LOCG-LBRY)
   - [ ] Police (LOCG-PLCE)
   - [ ] Fire (LOCG-FIRE)
   - [ ] THER (LOCG-OTHR)

d. HOSPITALS
   - [ ] General (HOSP-GENL)
   - [ ] Tuberculosis (HOSP-TUBR)
   - [ ] OTHER (HOSP-OTHR)

C — MINI-AUDIT FUNDING REQUEST

Instructions: With reference to page 23 entitled Funding Information, determine if the facilities are eligible for both Federal and State funding or just Federal funding. then answer the questions correctly for the situation. This section must be signed and dated by the head of the organization.

If eligible for both Federal and State Funding:
Have you received a mini-audit grant before? Yes [X] No
Have you previously applied for mini-audit funding? [X] Yes [ ] No
Do you wish to apply for mini-audit funding? [ ] Yes [X] No

Date: _____

Name: _____

Signature: _____

If eligible for Federal funding only:
Have you received a mini-audit grant before? [ ] Yes [ ] No
Have you previously applied for mini-audit funding? [ ] Yes [ ] No
Do you wish to apply for mini-audit funding? [ ] Yes [ ] No
The 50% match for Federal funds will come from: (Use additional sheets if necessary.)

Date: _____

Name: _____

Signature: _____

D ENERGY REPORT CHECK-OFF

Check the type of energy report which was completed and submitted prior to this mini-audit report.

- ☐ Elementary School Energy Report (Form No. ED-00444-02)
- ☐ Secondary School Energy Report (Form No. ED-00445-02)
- X☒ Existing Building Energy Report (Form No. EN-00041-01)

If an energy report has not been completed previous to this mini-audit report, one must be included with this report. Elementary, secondary, and vocational schools should use form ED-00444-02 or form ED-00445-02, depending on building complexity. All other buildings should use the existing building energy report, form EN-00041-01.

E MINI-AUDIT STATEMENTS

Instructions: This section is to be completed and signed by a registered professional engineer or by a certified mini-auditor who has successfully completed the State of Minnesota's Mini-Audit Procedures Course. This section should be completed after this mini-audit report and an energy report are completed. All blanks must be filled in.

I have reviewed the energy report and/or the energy report results for this building. I found all information contained therein to be correct *OR* I have corrected any misinformation on the energy report which will be resubmitted with this mini-audit report to the Minnesota Energy Agency.

I am not directly responsible for the day to day operations of this building being audited.

I have fully disclosed my financial interests relating to this mini-audit and any energy conservation measures considered by this audit.

I have walked through this building and have found the recommendations listed in section I of this mini-audit report to be the operations and maintenance changes, and low cost energy conservation measures, which would reduce energy consumption in this building.

I have made a rough estimate, in section G, of the range of savings which may result from the implementation of all of the mini-audit opportunities listed in section I. I am not responsible if the actual savings resulting from this mini-audit do not fall within the estimated range.

Based on actual records, the energy conservation operating and maintenance procedures listed in section K did not (did, did not) save at least 20% of the building's energy consumption as specified in section I.

Based upon my observation of the physical characteristics of this building and the building's major energy using systems, I recommend that this should (should, should not) be the subject of a maxi-audit.
I realize that this is not a final judgement, that the State reserves the right to make the maxi-audit funding determination based on this mini-audit report and other criteria.

Based upon the information in section E and the information referred to in section F, I recommend that this building should not (should, should not) undergo further solar conversion analysis, and/or should not (should, should not) undergo further analysis of the renewable resources — waste, wind, wood. (Circle proper resources)

In my judgement, as a mini-auditor, all of the above statements are true and correct.

Paul Martinsen
Mini-Auditor's Name (Print or Type)

Paul Martinsen P.E. 9597
Signature

Rieke Carroll Muller Assoc., Inc.
Firm Name (if none, enter none)

P.O. Box 130 Hopkins, MN 55343
Address

(612) 935-6901
Phone

6-3-80
Date

Witnessed by:

Building Organizational Authority (Print or Type)

Signature

Date

F AUDIT TEAM

NAME	POSITION	ORGANIZATION
Paul Martinsen	Mechanical Engineer	Rieke Carroll Muller Assoc., Inc.
Reinert Ege	Maintenance Engineer	City of Bloomington

G BUILDING INFORMATION

BRIEF DESCRIPTION OF GENERAL BUILDING CONDITION (i.e. type, and function)
Good - Maintenance Garage and Office

MAJOR CHANGES PLANNED WITHIN NEXT 15 YEARS (i.e. demolition, rehabilitation, conversion from one building type to another)
None

STRUCTURAL COMPONENTS OF ROOF (i.e. metal beams, wooden rafters, concrete)
Bar Joists.

ROOFING MATERIAL (i.e. tar and gravel, shingles, tile)
Tar and Gravel

H SOLAR POTENTIAL INFORMATION

INSTRUCTIONS: Correctly answer the following questions for the building being mini-audited.

Is there open land adjacent to the building?
☒ Yes ☐ No

Solar collectors need to be located in an unshaded area. Is the roof of the building and the south facing wall unshaded between the hours of 9 a.m. and 3 p.m.?
Roof: ☒ Yes ☐ No
South facing Wall: ☒ Yes ☐ No

If the roof or wall are partly shaded, what percentage of the surface is unshaded?
% of roof unshaded _____ %
% of south facing wall unshaded _____ %

What is the overall shape of the building?
☐ square ☒ rectangle ☐ H-shaped ☐ E-shaped ☐ other (specify) _____

Is the roof of the building flat or pitched?
☒ flat ☐ pitched

If pitched, what is the compass orientation of the ridgeline? _____

If pitched, what is the angle that the roof makes with horizontal? _____°

Are there large obstructions on the roof such as chimneys, rooms for mechanical equipment, ventilating units, water towers, etc?
☐ Yes ☒ No

What is the exterior facing material for the south facing wall? Concrete Block

What percentage of the south facing wall is glass? 0 %

Is the building's space heating equipment located within or on the building? (A no answer indicates the equipment is in a separate building.)
☒ Yes ☐ No

If the space heating equipment is inside the building, where is it located?
☒ Ground Floor ☐ Basement ☐ Roof ☐ Other (specify) 2nd Floor

Is the building's water heating equipment located within the building? (A no answer indicates the equipment is in a separate building.)
☒ Yes ☐ No

If the water heating equipment is inside the building, where is it located?
☒ Ground Floor ☐ Basement ☐ Other (specify) _____

Is the water heating system a central system, does it consist of multiple units, or is it a combination of the central and multiple units?
☒ Central ☐ Multiple ☐ Combination

I — 20% SAVINGS DATA

Instructions: Enter the total energy used of each fuel type for the base period and the year when there was a 20% or greater energy savings. Indicate the unit of measure. Enter the appropriate conversion factor from Appendix B to convert energy usage into Btu's. Be sure to enter the fiscal years of which the data applies. Refer to pages 7 and 15 for a complete explanation of this section.

BASE PERIOD YEAR — Fiscal Year _____

ENERGY TYPE	ENERGY USAGE	CONVERSION FACTOR	BTU USAGE
Electricity			
Fuel 1			
Fuel 2			
TOTAL			

20% SAVINGS YEAR — Fiscal Year _____

ENERGY TYPE	ENERGY USAGE	CONVERSION FACTOR	BTU USAGE
Electricity			
Fuel 1			
Fuel 2			
TOTAL			

J — SAVINGS ESTIMATION

Instructions: This section is to be completed by the mini-auditor after the walk-thru portion of the mini-audit. First, check the appropriate boxes which state the roughly estimated range of the percent of total electrical and fuel consumption which would be saved resulting from the implementation of all of the new mini-audit opportunities listed in section L. Secondly, calculate the range of energy and cost savings by multiplying the estimated percentages by the annual electrical and fuel consumption data on the energy report.

1

Check two boxes in each category —

Range of Electrical Savings — ☒ 0% ☒ 5% ☐ 10% ☐ 15% ☐ 20% ☐ 25% ☐ other (specify) _____

Range of Fuel Savings — ☒ 0% ☒ 5% ☐ 10% ☐ 15% ☐ 20% ☐ 25% ☐ other (specify) _____

2

Calculate ranges of energy and cost savings —

Range of Electrical Savings

	% Range		Annual Electrical Consumption		Range of Energy Savings	% Range		Annual Electrical Dollars Spent		Range of Electrical Dollars Savings
lower bound	0 %	x	34,200 kwh	=	0 kwh,	0 %	x	$ 1308.62	=	$ 0
to					to	to				to
upper bound	5 %	x	34,200 kwh	=	1,710 kwh,	5 %	x	$ 1308.62	=	$ 65.43

3

Range of Fuel Savings

	% Range		Annual Fuel Consumption		Range of Fuel Savings	% Range		Annual Fuel Dollars Spent		Range of Fuel Dollars Savings
lower bound	0 %	x	1.58×10^9 Btu	=	0 Btu,	0 %	x	$ 4034.71	=	$ 0
to					to	to				to
upper bound	5 %	x	1.58×10^9 Btu	=	7.9×10^7 Btu,	5 %	x	$ 4034.71	=	$ 201.73

The mini-auditor is not responsible if actual savings resulting from the implementation of the energy conservation opportunities listed in section I do not fall between the roughly estimated ranges which are specified.

K

Instructions: Read through the list of energy conservation opportunities provided. As you read through the items, list below those items which have already been undertaken in your facility. The description of the past energy conservation action should contain the specific building location where the recommendation applies, if applicable. Indicate the date of implementation of each item and its classification number. Energy conserving items which have been undertaken and are not on the list provided should also be included along with their appropriate classification numbers. The classification number should be taken from the classification scheme for energy conservation opportunities listed on pages 25 through 37. *This section of the mini-audit report should be completed by building personnel prior to the walk-through by the mini-auditor.*

ITEM NO.	CLASSIFICATION NO.		PAST ENERGY CONSERVATION ACTIONS	OPTIONAL: ENERGY SAVINGS	OPTIONAL: ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS				
1	3	1	Outside air closed off on make-up air unit.			Fall 79

Note: Reproduce this page as necessary

NEW OPPORTUNITIES

Instructions: Read through the energy conservation recommendation list provided. Then walk through the building with the list. Examine the suggested maintenance and operational changes, and any other low cost energy conservation measures, that pertain to the facility. As you go along, record the item number, the classification number of the recommendation, and the new mini-audit opportunity. The description of the mini-audit opportunity should contain the specific building location where the recommendation applies, if applicable. Any recommendation not found on the list may also be included. For those other recommendations, assign an appropriate classification number from the classification scheme for energy conservation opportunities listed on pages 25 through 37. The date of implementation should only be completed as the recommendation is implemented. *This section of the mini-audit report should be completed by the mini-audit team during the building walk-through.*

ITEM NO	CLASSIFICATION NO.		NEW MINI-AUDIT OPPORTUNITIES	OPTIONAL: ENERGY SAVINGS	OPTIONAL: ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS				
1	1	1	Keep all controls free of dust.			
2	1	2	Lubricate motors to reduce wear and excessive torque.			
3	1	2	Where it is impractical to replace motors which have low loads and power factors, use capacitors at motor terminals to correct the power factor to 90%.			
4	2	1	Check the amount of insulation in the ceiling and add if required.			
5	2	2	Weatherstrip all exterior doors including garage or delivery doors.			
6	2	8	Insulate walls with rigid insulation on inside and/or outside surfaces, or place loose fill insulation in wall cavities.			
7	2	9	Weatherstrip and caulk around door frames.			
8	3	1	Check operation of entire heating/cooling control system, including control valves and dampers.			
9	3	1	Check the calibration of all controllers and devices for proper settings and operations.			
10	3	1	Lower the supply air temperature for heating to the lowest point necessary to provide minimum required heating.			
11	3	3	Clean or replace filters periodically or when indicated by filter gauges. If there are no gauges, consider installing them.			
12	3	3	Inspect air compressor intake filter pads and clean or replace as necessary.			
13	3	3	Check the air compressor's oil level.			
14	4	1	Instruct occupants and maintenance personnel to switch off all lights when they are not needed.			
15	4	3	Clean fixtures and lamps regularly.			
16	4	3	Keep walls, ceiling and floors clean.			

Note 1: Date of Implementation should only be completed as the recommendation is implemented. The mini-audit report may be submitted to the Minnesota Energy Agency before the "Date of Implementation" has been completed.

Note 2: Reproduce this page as necessary.

NEW OPPORTUNITIES

Instructions: Read through the energy conservation recommendation list provided. Then walk through the building with the list. Examine the suggested maintenance and operational changes, and any other low cost energy conservation measures, that pertain to the facility. As you go along, record the item number, the classification number of the recommendation, and the new mini-audit opportunity. The description of the mini-audit opportunity should contain the specific building location where the recommendation applies, if applicable. Any recommendation not found on the list may also be included. For those other recommendations, assign an appropriate classification number from the classification scheme for energy conservation opportunities listed on pages 25 through 37. The date of implementation should only be completed as the recommendation is implemented. *This section of the mini-audit report should be completed by the mini-audit team during the building walk-through.*

ITEM NO	CLASSIFICATION NO. MAJOR CLASS	CLASSIFICATION NO. SUB CLASS	NEW MINI-AUDIT OPPORTUNITIES	OPTIONAL: ENERGY SAVINGS	OPTIONAL: ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
17	4	3	When repainting, use light colored paint on ceilings, walls and floors but avoid objectionable specular reflections from glass finishes.			
18	4	4	Remove unnecessary lamps, fixtures, and ballasts.			
19	4	4	Use lower wattage lamps to provide the necessary illumination.			
20	4	4	Allow part of a lighting system to be turned off while maintaining the necessary light.			
21	4	5	Rearrange lighting fixtures for task localized use.			
22	4	5	Direct security lighting where it is most required, such as at windows and entrances and reduce it where the security problems are minimal.			
23	5	1	Keep records of the operating scheldule, monthly energy consumption and purchase of any new equipment that affects energy consumption of efficiency of the building. These records will indicate the impact of energy conservation measures.			
24	5	1	Review the record books on a regular basis.			
25	5	2	Establish a specific maintenance schedule for each building to ensure that all components of the specific building operate at maximum efficiency. Consult manufacturers literature for guidance in establishing a maintenance schedule.			
26	6	1	Adjust water heater supply to 100°F for all except special requirements.			
27	6	1	Check the operation of the temperature controller so overheating does not occur.			
28	6	2	Periodically drain and remove the sediment from water heaters.			
29	7	4	Keep all furnace heat exchanger surfaces clean. Check air-to-fuel ratio and adjust as necessary.			
30	7	4	Inspect casing for air leaks and seal as necessary.			

Note 1 Date of Implementation should only be completed as the recommendation is implemented. The mini-audit report may be submitted to the Minnesota Energy Agency before the "Date of Implementation" has been completed.

Note 2 Reproduce this page as necessary

MINI-AUDIT REPORT

FORM NO. MIN-01

A — CONTACT DATA

BUILDING NAME		NAME OF ORGANIZATION	DATE
Ryan Building		City of Bloomington	6-3-80
BUILDING ADDRESS		**ADDRESS**	
9750 James Avenue South		2215 West Old Shakopee Road	
CITY	**ZIP CODE**	**CITY**	**ZIP CODE**
Bloomington, MN	55431	Bloomington, MN	55431
PERSON COMPLETING FORM	**TELEPHONE**	**CONTACT PERSON**	**TELEPHONE**
Paul Martinsen	(612) 935-6901	Arthur Jensen	(612) 881-5811

B — BUILDING ELIGIBILITY CODE

Instructions: For blocks 1 and 2 check the box which best fits the building ownership conditions. For block 3 determine which of the four categories describes the building type and then within the category check off the sub category befitting the building function.

1. OWNERSHIP TYPE
   - [X] Public (PUB)
   - [ ] Non-Profit Association (NAP)

2. ULTIMATE OWNER
   - [ ] County (CNTY)
   - [X] City (CITY)
   - [ ] Township (TOWN)
   - [ ] State (STAT)
   - [ ] Public School (PUSC)
   - [ ] Private School (PRSC)
   - [ ] Non-Profit Association (NPAP)
   - [ ] Indian Tribe (INDN)

3a. SCHOOLS
   - [ ] Elementary (SCHL-ELM)
   - [ ] Secondary (SCHL-SECD)
   - [ ] Coll. or Univ. (SCHL-POST)
   - [ ] Vocational (SCHL-VOCL)
   - [ ] Education Agency (SCHL-ADMN)
   - [ ] Administration (SCHL-ADMN)
   - [ ] OTHER (SCHL-OTHR)

b. PUBLIC CARE
   - [ ] Nursing Home (PBCR-NURS)
   - [ ] Long Term Care (PBCR-TERM)
   - [ ] Rehab. Facility (PBCR-RHAB)
   - [ ] Public Health Ctr. (PBCR-HCTR)
   - [ ] Res. Child Care Ctr. (PBCR-RCCC)

c. LOCAL GOVERNMENT
   - [X] Office (LOCG-OFFC)
   - [ ] Storage (LOCG-STRG)
   - [X] Service (LOCG-SERV)
   - [ ] Library (LOCG-LBRY)
   - [ ] Police (LOCG-PLCE)
   - [ ] Fire (LOCG-FIRE)
   - [ ] OTHER (LOCG-OTHR)

d. HOSPITALS
   - [ ] General (HOSP-GENL)
   - [ ] Tuberculosis (HOSP-TUBR)
   - [ ] OTHER (HOSP-OTHR)

C — MINI-AUDIT FUNDING REQUEST

Instructions: With reference to page 23 entitled Funding Information, determine if the facilities are eligible for both Federal and State funding or just Federal funding. then answer the questions correctly for the situation. This section must be signed and dated by the head of the organization.

If eligible for both Federal and State Funding:
Have you received a mini-audit grant before? [ ] Yes [X] No
Have you previously applied for mini-audit funding? [X] Yes [ ] No
Do you wish to apply for mini-audit funding? [ ] Yes [X] No

Date: _____

Name: _____

Signature: _____

If eligible for Federal funding only:
Have you received a mini-audit grant before? [ ] Yes [ ] No
Have you previously applied for mini-audit funding? [ ] Yes [ ] No
Do you wish to apply for mini-audit funding? [ ] Yes [ ] No
The 50% match for Federal funds will come from: (Use additional sheets if necessary.)

Date: _____

Name: _____

Signature: _____

D ENERGY REPORT CHECK-OFF

Check the type of energy report which was completed and submitted prior to this mini-audit report.

- ☐ Elementary School Energy Report (Form No. ED-00444-02)
- ☐ Secondary School Energy Report (Form No. ED-00445-02)
- XX ☒ Existing Building Energy Report (Form No. EN-00041-01)

If an energy report has not been completed previous to this mini-audit report, one must be included with this report. Elementary, secondary, and vocational schools should use form ED-00444-02 or form ED-00445-02, depending on building complexity. All other buildings should use the existing building energy report, form EN-00041-01.

E MINI-AUDIT STATEMENTS

Instructions: This section is to be completed and signed by a registered professional engineer or by a certified mini-auditor who has successfully completed the State of Minnesota's Mini-Audit Procedures Course. This section should be completed after this mini-audit report and an energy report are completed. All blanks must be filled in.

I have reviewed the energy report and/or the energy report results for this building. I found all information contained therein to be correct *OR* I have corrected any misinformation on the energy report which will be resubmitted with this mini-audit report to the Minnesota Energy Agency.

I am not directly responsible for the day to day operations of this building being audited.

I have fully disclosed my financial interests relating to this mini-audit and any energy conservation measures considered by this audit.

I have walked through this building and have found the recommendations listed in section I of this mini-audit report to be the operations and maintenance changes, and low cost energy conservation measures, which would reduce energy consumption in this building.

I have made a rough estimate, in section G, of the range of savings which may result from the implementation of all of the mini-audit opportunities listed in section I. I am not responsible if the actual savings resulting from this mini-audit do not fall within the estimated range.

Based on actual records, the energy conservation operating and maintenance procedures listed in section K ___did not___ (did, did not) save at least 20% of the building's energy consumption as specified in section I.

Based upon my observation of the physical characteristics of this building and the building's major energy using systems, I recommend that this ___should___ (should, should not) be the subject of a maxi-audit.
I realize that this is not a final judgement, that the State reserves the right to make the maxi-audit funding determination based on this mini-audit report and other criteria.

Based upon the information in section E and the information referred to in section F, I recommend that this building ___should not___ (should, should not) undergo further solar conversion analysis, and/or ___should not___ (should, should not) undergo further analysis of the renewable resources — waste, wind, wood. (Circle proper resources)

In my judgement, as a mini-auditor, all of the above statements are true and correct.

Witnessed by:

Paul Martinsen
Mini-Auditor's Name (Print or Type)

Paul B. Martinsen P.E. 9597
Signature

Rieke Carroll Muller Assoc., Inc.
Firm Name (if none, enter none)

P.O. Box 130 Hopkins, MN 55343
Address

(612) 935-6901
Phone

8-3-80
Date

Building Organizational Authority (Print or Type)

Signature

Date

F AUDIT TEAM

NAME	POSITION	ORGANIZATION
Paul Martinsen	Mechanical Engineer	Rieke Carroll Muller Assoc., Inc.
Reinert Ege	Maintenence Engineer	City of Bloomington

G BUILDING INFORMATION

BRIEF DESCRIPTION OF GENERAL BUILDING CONDITION (i.e. type, and function)
Good - Office Building

MAJOR CHANGES PLANNED WITHIN NEXT 15 YEARS (i.e. demolition, rehabilitation, conversion from one building type to another)
Remodeling for more office space

STRUCTURAL COMPONENTS OF ROOF (i.e. metal beams, wooden rafters, concrete)
Bar Joist

ROOFING MATERIAL (i.e. tar and gravel, shingles, tile)
Tar and Gravel

H SOLAR POTENTIAL INFORMATION

INSTRUCTIONS: Correctly answer the following questions for the building being mini-audited.

Is there open land adjacent to the building?
☒ Yes ☐ No

Solar collectors need to be located in an unshaded area. Is the roof of the building and the south facing wall unshaded between the hours of 9 a.m. and 3 p.m.?
Roof: ☒ Yes ☐ No
South facing Wall: ☒ Yes ☐ No

If the roof or wall are partly shaded, what percentage of the surface is unshaded?
% of roof unshaded 95 %
% of south facing wall unshaded 90 %

What is the overall shape of the building?
☐ square ☒ rectangle ☐ H-shaped ☐ E-shaped ☐ other (specify) _____

Is the roof of the building flat or pitched?
☒ flat ☐ pitched

If pitched, what is the compass orientation of the ridgeline? _____

If pitched, what is the angle that the roof makes with horizontal? _____°

Are there large obstructions on the roof such as chimneys, rooms for mechanical equipment, ventilating units, water towers etc?
☒ Yes ☐ No

What is the exterior facing material for the south facing wall? Concrete Block

What percentage of the south facing wall is glass? 15 %

Is the building's space heating equipment located within or on the building? (A no answer indicates the equipment is in a separate building.)
☒ Yes ☐ No

If the space heating equipment is inside the building, where is it located?
☒ Ground Floor ☐ Basement ☒ Roof ☐ Other (specify) _____

Is the building's water heating equipment located within the building? (A no answer indicates the equipment is in a separate building.)
☒ Yes ☐ No

If the water heating equipment is inside the building, where is it located?
☒ Ground Floor ☐ Basement ☐ Other (specify) _____

Is the water heating system a central system, does it consist of multiple units, or is it a combination of the central and multiple units?
☒ Central ☐ Multiple ☐ Combination

I

Instructions: Enter the total energy used of each fuel type for the base period and the year when there was a 20% or greater energy savings. Indicate the unit of measure. Enter the appropriate conversion factor from Appendix B to convert energy usage into Btu's. Be sure to enter the fiscal years of which the data applies. Refer to pages 7 and 15 for a complete explanation of this section.

20% SAVINGS DATA

BASE PERIOD YEAR — Fiscal Year _____

ENERGY TYPE	ENERGY USAGE	CONVERSION FACTOR	BTU USAGE
Electricity			
Fuel 1			
Fuel 2			
TOTAL			

20% SAVINGS YEAR — Fiscal Year _____

ENERGY TYPE	ENERGY USAGE	CONVERSION FACTOR	BTU USAGE
Electricity			
Fuel 1			
Fuel 2			
TOTAL			

J

Instructions: This section is to be completed by the mini-auditor after the walk-thru portion of the mini-audit. First, check the appropriate boxes which state the roughly estimated range of the percent of total electrical and fuel consumption which would be saved resulting from the implementation of all of the new mini-audit opportunities listed in section L. Secondly, calculate the range of energy and cost savings by multiplying the estimated percentages by the annual electrical and fuel consumption data on the energy report.

1

Check two boxes in each category —

Range of Electrical Savings — ☒ 0% ☒ 5% ☐ 10% ☐ 15% ☐ 20% ☐ 25% ☐ other (specify) _____

Range of Fuel Savings — ☐ 0% ☒ 5% ☒ 10% ☐ 15% ☐ 20% ☐ 25% ☐ other (specify) _____

2

Calculate ranges of energy and cost savings —

Range of Electrical Savings

	% Range		Annual Electrical Consumption		Range of Energy Savings		% Range		Annual Electrical Dollars Spent		Range of Electrical Dollars Savings
lower bound	0 %	x	254,800 kwh	=	0 kwh,		0 %	x	$ 11,582.36	=	$ 0
	to				to		to				to
upper bound	5 %	x	254,800 kwh	=	12,740 kwh,		5 %	x	$ 11,582.36	=	$ 579.12

3

Range of Fuel Savings

	% Range		Annual Fuel Consumption		Range of Fuel Savings		% Range		Annual Fuel Dollars Spent		Range of Fuel Dollars Savings
lower bound	5 %	x	1.0×10^{10} Btu	=	5×10^{8} Btu,		5 %	x	$ 27,188.68	=	$ 1,359.43
	to				to		to				to
upper bound	10 %	x	1.0×10^{10} Btu	=	1.0×10^{9} Btu,		10 %	x	$ 27,188.68	=	$ 2,718.87

SAVINGS ESTIMATION

The mini-auditor is not responsible if actual savings resulting from the implementation of the energy conservation opportunities listed in section I do not fall between the roughly estimated ranges which are specified.

K

Instructions: Read through the list of energy conservation opportunities provided. As you read through the items, list below those items which have already been undertaken in your facility. The description of the past energy conservation action should contain the specific building location where the recommendation applies, if applicable. Indicate the date of implementation of each item and its classification number. Energy conserving items which have been undertaken and are not on the list provided should also be included along with their appropriate classification numbers. The classification number should be taken from the classification scheme for energy conservation opportunities listed on pages 25 through 37. *This section of the mini-audit report should be completed by building personnel prior to the walk-through by the mini-auditor.*

ITEM NO.	CLASSIFICATION NO.		PAST ENERGY CONSERVATION ACTIONS	OPTIONAL: ENERGY SAVINGS	OPTIONAL: ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS				

Note: Reproduce this page as necessary

NEW OPPORTUNITIES

Instructions: Read through the energy conservation recommendation list provided. Then walk through the building with the list. Examine the suggested maintenance and operational changes, and any other low cost energy conservation measures, that pertain to the facility. As you go along, record the item number, the classification number of the recommendation, and the new mini-audit opportunity. The description of the mini-audit opportunity should contain the specific building location where the recommendation applies, if applicable. Any recommendation not found on the list may also be included. For those other recommendations, assign an appropriate classification number from the classification scheme for energy conservation opportunities listed on pages 25 through 37. The date of implementation should only be completed as the recommendation is implemented. *This section of the mini-audit report should be completed by the mini-audit team during the building walk-through.*

ITEM NO	CLASSIFICATION NO.		NEW MINI-AUDIT OPPORTUNITIES	OPTIONAL: ENERGY SAVINGS	OPTIONAL: ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS				
1	1	1	Keep all controls free of dust.			
2	1	2	Lubricate motors to reduce wear and excessive torque.			
3	1	2	Keep motors clean to make cooling easier.			
4	1	2	Where it is impractical to replace motors which have low loads and power factors, use capacitors at moter terminals to correct the power factor to 90%.			
5	2	1	Check the amount of insulation in the ceiling and add if required.			
6	2	2	Weatherstrip all exterior doors including garage or delivery doors.			
7	2	2	Replace an existing door with one of a higher R-value.			
8	2	3	Clean windows so more sunlight shines through them during the heating season.			
9	2	6	Insulate the roof areas.			
10	2	7	Inspect the vestibule exterior and interior surfaces and seal all cracks.			
11	2	8	Insulate walls with rigid insulation on inside and/or outside surfaces, or place loose fill insulation in wall cavities.			
12	2	9	Weatherstrip and caulk around door frames.			
13	2	9	Weatherstrip and caulk around window frames.			
14	3	1	Check operation of entire heating/ cooling control system, including control valves and dampers.			
15	3	1	Check the calibration of all controllers and devices for proper settings and operations.			
16	3	1	Raise the supply air temperature for cooling to the highest point necessary to provide minimum required cooling.			
17	3	1	Lower the supply air temperature for heating to the lowest point necessary to provide minimum required heating.			
18	3	1	Operate without fresh air ventilation when the building is unoccupied.			

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Note 2: Reproduce this page as necessary.

L NEW OPPORTUNITIES

Instructions: Read through the energy conservation recommendation list provided. Then walk through the building with the list. Examine the suggested maintenance and operational changes, and any other low cost energy conservation measures, that pertain to the facility. As you go along, record the item number, the classification number of the recommendation, and the new mini-audit opportunity. The description of the mini-audit opportunity should contain the specific building location where the recommendation applies, if applicable. Any recommendation not found on the list may also be included. For those other recommendations, assign an appropriate classification number from the classification scheme for energy conservation opportunities listed on pages 25 through 37. The date of implementation should only be completed as the recommendation is implemented. *This section of the mini-audit report should be completed by the mini-audit team during the building walk-through.*

ITEM NO	CLASSIFICATION NO. MAJOR CLASS	CLASSIFICATION NO. SUB CLASS	NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS OPTIONAL:	ENERGY COST SAVINGS OPTIONAL:	DATE OF IMPLEMENTATION
19	3	1	Reduce the amount of infiltration and outdoor air ventilation to provide only the minimum required.			
20	3	1	Consider regulating the fresh air dampers with enthalpy control so that the building can be cooled with outdoor air when this saves energy.			
21	3	2	Clean and remove obstructions from all room air outlets and inlets (diffusers, registers and grillers). They should be kept clean and free of all dirt and foreign materials.			
22	3	3	Inspect drive belts. Adjust or replace as necessary to ensure proper operation.			
23	3	3	Make sure that all fans, frequently inoperative in unit heaters, fan coil units, and unit ventilators are running normally to increase the heat transfer rate from heating coils.			
24	3	3	Keep condenser coil face clean to permit proper air flow.			
25	3	3	Inspect ductwork for air leakage. Seal all leaks by taping or caulking.			
26	3	3	Inspect damper blades and linkages. Clean, oil and adjust.			
27	3	3	Clean or replace filters periodically or when indicated by filter gauges.			
			If there are no gauges, consider installing them.			
28	3	3	Check compressor belt tension and alignment.			
29	3	3	Inspect air compressor intake filter pads and clean or replace as necessary.			
30	3	3	Check the compressor's oil level.			
31	3	3	Periodically drain the moisture from storage tank.			
32	3	7	Consider different heating system for garage area with high ceilings.			
33	4	1	Instruct occupants and maintenance personnel to switch off all lights when they are not needed.			
34	4	3	Clean fixtures and lamps regularly.			

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Note 2 Reproduce this page as necessary

F NEW OPPORTUNITIES

Instructions: Read through the energy conservation recommendation list provided. Then walk through the building with the list. Examine the suggested maintenance and operational changes, and any other low cost energy conservation measures, that pertain to the facility. As you go along, record the item number, the classification number of the recommendation, and the new mini-audit opportunity. The description of the mini-audit opportunity should contain the specific building location where the recommendation applies, if applicable. Any recommendation not found on the list may also be included. For those other recommendations, assign an appropriate classification number from the classification scheme for energy conservation opportunities listed on pages 25 through 37. The date of implementation should only be completed as the recommendation is implemented. *This section of the mini-audit report should be completed by the mini-audit team during the building walk-through.*

ITEM NO	CLASSIFICATION NO. MAJOR CLASS	CLASSIFICATION NO. SUB CLASS	NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS OPTIONAL:	ENERGY COST SAVINGS OPTIONAL:	DATE OF IMPLEMENTATION
35	4	3	In dirty areas enclose fixtures to reduce dirt collection.			
36	4	3	Replace lamps in groups before they burn out to maintain higher average			
			light output per fixture.			
37	4	3	Keep walls, ceiling and floors clean.			
38	4	3	When repainting, use light colored paint on ceilings, walls and floors			
			but avoid objectionable specular reflections from glass finishes.			
39	4	3	When recarpeting or retiling, put in lighter colored carpets or tiles.			
40	4	3	Change exterior lighting to a higher efficiency source.			
41	4	4	Remove unnecessary lamps, fixtures, and ballasts.			
42	4	4	Use lower wattage lamps to provide the necessary illumination.			
43	4	4	Allow part of a lighting system to be turned off while maintaining the			
			necessary light.			
44	4	5	Rearrange lighting fixtures for task localized use.			
45	4	5	Direct security lighting where it is most required, such as at windows and			
			entrances and reduce it where the security problems are minimal.			
46	5	1	Keep records of the operating schedule, monthly energy consumption of efficiency of the building. These			
			records will indicate the impact of energy conservation measures.			
47	5	1	Review the record books on a regular basis.			
48	5	2	Establish a specific maintenance schedule for each building to ensure			
			that all components of the specific building operate at maximum efficiency.			
			Consult manufacturers literature for guidance in establishing a maintenance			
			schedule.			
49	6	1	Adjust domestic water supply to 100°F for all except special requirements			
			(dishwasher supply units, etc.).			

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Note 2 Reproduce this page as necessary.

NEW OPPORTUNITIES

Instructions: Read through the energy conservation recommendation list provided. Then walk through the building with the list. Examine the suggested maintenance and operational changes, and any other low cost energy conservation measures, that pertain to the facility. As you go along, record the item number, the classification number of the recommendation, and the new mini-audit opportunity. The description of the mini-audit opportunity should contain the specific building location where the recommendation applies, if applicable. Any recommendation not found on the list may also be included. For those other recommendations, assign an appropriate classification number from the classification scheme for energy conservation opportunities listed on pages 25 through 37. The date of implementation should only be completed as the recommendation is implemented. *This section of the mini-audit report should be completed by the mini-audit team during the building walk-through.*

ITEM NO	CLASSIFICATION NO. MAJOR CLASS	CLASSIFICATION NO. SUB CLASS	NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS OPTIONAL:	ENERGY COST SAVINGS OPTIONAL:	DATE OF IMPLEMENTATION
50	6	2	The burner system of fossil-fuel water heaters should be kept clean and in good operating condition.			
51	6	2	Periodically drain and remove the sediment from the water heater.			
52	6	4	Consider heat recovery from paint booth exhaust.			
53	6	5	Install toilet flush valve kits that reduce water usage.			
54	6	5	Install flow restrictors.			
55	7	3	Seal all air leaks into combustion chamber, especially around doors, frames and inspection ports.			
56	7	4	Turn off gas pilots for furnaces, boilers, and space heaters during the non-heating months and during long unoccupied periods.			
57	7	4	Keep all heat exchanger surfaces clean. Check air-to-fuel ratio and adjust as necessary.			

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Note 2 Reproduce this page as necessary.

MINI-AUDIT REPORT

FORM NO. MIN-01

A — CONTACT DATA

BUILDING NAME		NAME OF ORGANIZATION	DATE
Rescue Station		City of Bloomington	5-23-80
BUILDING ADDRESS		**ADDRESS**	
2315 West 102nd St.		2215 West Old Shakopee Road	
CITY	**ZIP CODE**	**CITY**	**ZIP CODE**
Bloomington, Mn	55431	Bloomington, MN	55431
PERSON COMPLETING FORM	**TELEPHONE**	**CONTACT PERSON**	**TELEPHONE**
Randy Smith	(612) 935-6901	Arthur Jensen	(612) 881-5811

B — BUILDING ELIGIBILITY CODE

Instructions: For blocks 1 and 2 check the box which best fits the building ownership conditions. For block 3 determine which of the four categories describes the building type and then within the category check off the sub category befitting the building function.

1. OWNERSHIP TYPE
   - [X] Public (PUB)
   - [ ] Non-Profit Association (NAP)

2. ULTIMATE OWNER
   - [ ] County (CNTY)
   - [X] City (CITY)
   - [ ] Township (TOWN)
   - [ ] State (STAT)
   - [ ] Public School (PUSC)
   - [ ] Private School (PRSC)
   - [ ] Non-Profit Association (NPAP)
   - [ ] Indian Tribe (INDN)

3a. SCHOOLS
   - [ ] Elementary (SCHL-ELM)
   - [ ] Secondary (SCHL-SECD)
   - [ ] Coll. or Univ. (SCHL-POST)
   - [ ] Vocational (SCHL-VOCL)
   - [ ] Education Agency (SCHL-ADMN)
   - [ ] Administration (SCHL-ADMN)
   - [ ] OTHER (SCHL-OTHR)

b. PUBLIC CARE
   - [ ] Nursing Home (PBCR-NURS)
   - [ ] Long Term Care (PBCR-TERM)
   - [ ] Rehab. Facility (PBCR-RHAB)
   - [ ] Public Health Ctr. (PBCR-HCTR)
   - [ ] Res. Child Care Ctr. (PBCR-RCCC)

c. LOCAL GOVERNMENT
   - [ ] Office (LOCG-OFFC)
   - [ ] Storage (LOCG-STRG)
   - [ ] Service (LOCG-SERV)
   - [ ] Library (LOCG-LBRY)
   - [ ] Police (LOCG-PLCE)
   - [ ] Fire (LOCG-FIRE)
   - [X] OTHER (LOCG-OTHR)

d. HOSPITALS
   - [ ] General (HOSP-GENL)
   - [ ] Tuberculosis (HOSP-TUBR)
   - [ ] OTHER (HOSP-OTHR)

C — MINI-AUDIT FUNDING REQUEST

Instructions: With reference to page 23 entitled Funding Information, determine if the facilities are eligible for both Federal and State funding or just Federal funding. then answer the questions correctly for the situation. This section must be signed and dated by the head of the organization.

If eligible for both Federal and State Funding:
Have you received a mini-audit grant before? [ ] Yes [X] No
Have you previously applied for mini-audit funding? [X] Yes [ ] No
Do you wish to apply for mini-audit funding? [ ] Yes [X] No

Date: _____

Name: _____

Signature: _____

If eligible for Federal funding only:
Have you received a mini-audit grant before? [ ] Yes [ ] No
Have you previously applied for mini-audit funding? [ ] Yes [ ] No
Do you wish to apply for mini-audit funding? [ ] Yes [ ] No
The 50% match for Federal funds will come from: (Use additional sheets if necessary.)

Date: _____

Name: _____

Signature: _____

D ENERGY REPORT CHECK-OFF

Check the type of energy report which was completed and submitted prior to this mini-audit report.

- ☐ Elementary School Energy Report (Form No. ED-00444-02)
- ☐ Secondary School Energy Report (Form No. ED-00445-02)
- XX ☑ Existing Building Energy Report (Form No. EN-00041-01)

If an energy report has not been completed previous to this mini-audit report, one must be included with this report. Elementary, secondary, and vocational schools should use form ED-00444-02 or form ED-00445-02, depending on building complexity. All other buildings should use the existing building energy report, form EN-00041-01.

E MINI-AUDIT STATEMENTS

Instructions: This section is to be completed and signed by a registered professional engineer or by a certified mini-auditor who has successfully completed the State of Minnesota's Mini-Audit Procedures Course. This section should be completed after this mini-audit report and an energy report are completed. All blanks must be filled in.

I have reviewed the energy report and/or the energy report results for this building. I found all information contained therein to be correct *OR* I have corrected any misinformation on the energy report which will be resubmitted with this mini-audit report to the Minnesota Energy Agency.

I am not directly responsible for the day to day operations of this building being audited.

I have fully disclosed my financial interests relating to this mini-audit and any energy conservation measures considered by this audit.

I have walked through this building and have found the recommendations listed in section I of this mini-audit report to be the operations and maintenance changes, and low cost energy conservation measures, which would reduce energy consumption in this building.

I have made a rough estimate, in section G, of the range of savings which may result from the implementation of all of the mini-audit opportunities listed in section I. I am not responsible if the actual savings resulting from this mini-audit do not fall within the estimated range.

Based on actual records, the energy conservation operating and maintenance procedures listed in section K did not (did, did not) save at least 20% of the building's energy consumption as specified in section I.

Based upon my observation of the physical characteristics of this building and the building's major energy using systems, I recommend that this should not (should, should not) be the subject of a maxi-audit.
I realize that this is not a final judgement, that the State reserves the right to make the maxi-audit funding determination based on this mini-audit report and other criteria.

Based upon the information in section E and the information referred to in section F, I recommend that this building should not (should, should not) undergo further solar conversion analysis, and/or should not (should, should not) undergo further analysis of the renewable resources — waste, wind, wood. (Circle proper resources)

In my judgement, as a mini-auditor, all of the above statements are true and correct.

Witnessed by:

Randy Smith
Mini-Auditor's Name (Print or Type)

Randy Smith 206
Signature

Rieke Carroll Muller Assoc., Inc.
Firm Name (if none, enter none)

P.O. Box 130 Hopkins, MN 55343
Address

(612) 935-6901
Phone

5-23-80
Date

Building Organizational Authority (Print or Type)

Signature

Date

F AUDIT TEAM

NAME	POSITION	ORGANIZATION
Randy Smith	Certified Mini-Auditor	Rieke Carroll Muller Assoc., Inc.
Reinert Ege	Maintenance Engineer	City of Bloomington

G BUILDING INFORMATION

BRIEF DESCRIPTION OF GENERAL BUILDING CONDITION (i.e. type, and function)
Good, Storage of Rescue Vehicles

MAJOR CHANGES PLANNED WITHIN NEXT 15 YEARS (i.e. demolition, rehabilitation, conversion from one building type to another)
None

STRUCTURAL COMPONENTS OF ROOF (i.e. metal beams, wooden rafters, concrete)
Metal Beams

ROOFING MATERIAL (i.e. tar and gravel, shingles, tile)
Tar and Gravel

H SOLAR POTENTIAL INFORMATION

INSTRUCTIONS: Correctly answer the following questions for the building being mini-audited.

Is there open land adjacent to the building?
☐ Yes ☒ No

Solar collectors need to be located in an unshaded area. Is the roof of the building and the south facing wall unshaded between the hours of 9 a.m. and 3 p.m.?
Roof: ☒ Yes ☐ No
South facing Wall: ☐ Yes ☒ No

If the roof or wall are partly shaded, what percentage of the surface is unshaded?
% of roof unshaded _____ %
% of south facing wall unshaded 20 %

What is the overall shape of the building?
☐ square ☒ rectangle ☐ H-shaped ☐ E-shaped ☐ other (specify) _____

Is the roof of the building flat or pitched?
☒ flat ☐ pitched

If pitched, what is the compass orientation of the ridgeline? _____

If pitched, what is the angle that the roof makes with horizontal? _____ °

Are there large obstructions on the roof such as chimneys, rooms for mechanical equipment, ventilating units, water towers, etc?
☐ Yes ☒ No

What is the exterior facing material for the south facing wall? Stucco

What percentage of the south facing wall is glass? 1 %

Is the building's space heating equipment located within or on the building? (A no answer indicates the equipment is in a separate building.)
☒ Yes ☐ No

If the space heating equipment is inside the building, where is it located?
☒ Ground Floor ☐ Basement ☐ Roof ☐ Other (specify) _____

Is the building's water heating equipment located within the building? (A no answer indicates the equipment is in a separate building.)
☒ Yes ☐ No

If the water heating equipment is inside the building, where is it located?
☒ Ground Floor ☐ Basement ☐ Other (specify) _____

Is the water heating system a central system, does it consist of multiple units, or is it a combination of the central and multiple units?
☒ Central ☐ Multiple ☐ Combination

I — 20% SAVINGS DATA

Instructions: Enter the total energy used of each fuel type for the base period and the year when there was a 20% or greater energy savings. Indicate the unit of measure. Enter the appropriate conversion factor from Appendix B to convert energy usage into Btu's. Be sure to enter the fiscal years of which the data applies. Refer to pages 7 and 15 for a complete explanation of this section.

BASE PERIOD YEAR — Fiscal Year _____

ENERGY TYPE	ENERGY USAGE	CONVERSION FACTOR	BTU USAGE
Electricity			
Fuel 1			
Fuel 2			
TOTAL			

20% SAVINGS YEAR — Fiscal Year _____

ENERGY TYPE	ENERGY USAGE	CONVERSION FACTOR	BTU USAGE
Electricity			
Fuel 1			
Fuel 2			
TOTAL			

J — SAVINGS ESTIMATION

Instructions: This section is to be completed by the mini-auditor after the walk-thru portion of the mini-audit. First, check the appropriate boxes which state the roughly estimated range of the percent of total electrical and fuel consumption which would be saved resulting from the implementation of all of the new mini-audit opportunities listed in section L. Secondly, calculate the range of energy and cost savings by multiplying the estimated percentages by the annual electrical and fuel consumption data on the energy report.

1

Check two boxes in each category —

Range of Electrical Savings — ☒ 0% ☒ 5% ☐ 10% ☐ 15% ☐ 20% ☐ 25% ☐ other (specify) _____

Range of Fuel Savings — ☐ 0% ☒ 5% ☒ 10% ☐ 15% ☐ 20% ☐ 25% ☐ other (specify) _____

2

Calculate ranges of energy and cost savings —

Range of Electrical Savings

	% Range		Annual Electrical Consumption		Range of Energy Savings	% Range		Annual Electrical Dollars Spent		Range of Electrical Dollars Savings
lower bound	0 %	x	8370 kwh	=	0 kwh,	0 %	x	$ 392.87	=	$ 0
to upper bound	5 %	x	8370 kwh	=	418.5 kwh,	5 %	x	$ 392.87	=	$ 19.64

3

Range of Fuel Savings

	% Range		Annual Fuel Consumption		Range of Fuel Savings	% Range		Annual Fuel Dollars Spent		Range of Fuel Dollars Savings
lower bound	5 %	x	25.2×10^6 Btu	=	12.6×10^5 Btu,	5 %	x	$ 594.51	=	$ 29.73
to upper bound	10 %	x	25.2×10^6 Btu	=	25.6×10^5 Btu,	10 %	x	$ 594.51	=	$ 59.45

The mini-auditor is not responsible if actual savings resulting from the implementation of the energy conservation opportunities listed in section I do not fall between the roughly estimated ranges which are specified.

K

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ITEM NO.	CLASSIFICATION NO.		PAST ENERGY CONSERVATION ACTIONS	OPTIONAL: ENERGY SAVINGS	OPTIONAL: ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS				

Note: Reproduce this page as necessary

NEW OPPORTUNITIES

Instructions: Read through the energy conservation recommendation list provided. Then walk through the building with the list. Examine the suggested maintenance and operational changes, and any other low cost energy conservation measures, that pertain to the facility. As you go along, record the item number, the classification number of the recommendation, and the new mini-audit opportunity. The description of the mini-audit opportunity should contain the specific building location where the recommendation applies, if applicable. Any recommendation not found on the list may also be included. For those other recommendations, assign an appropriate classification number from the classification scheme for energy conservation opportunities listed on pages 25 through 37. The date of implementation should only be completed as the recommendation is implemented. *This section of the mini-audit report should be completed by the mini-audit team during the building walk-through.*

OPTIONAL: OPTIONAL:

ITEM NO.	CLASSIFICATION NO. MAJOR CLASS	CLASSIFICATION NO. SUB CLASS	NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS	ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
1	1	1	Keep all controls free of dust.			
2	2	1	Check the amount of insulation in the ceiling.			
3	2	1	Add insulation above the ceilings if needed.			
4	2	8	Insulate walls with rigid insulation on inside surfaces, or place loose fill insulation in wall cavaties.			
5	2	10	Inspect window closing and locing devices to insure a tight window.			
6	2	10	Replace single glazed windows with double glazed thermopanes.			
7	3	1	Check the calibration of all controllers and devices for proper settings and operations.			
8	3	1	Lower the supply air temperature for heating to the lowest point necessary to provide minimum required heating.			
9	3	1	65^{o}F maximum occupied, 60^{o}F maximum unoccupied during the heating season.			
10	3	3	Inspect and lubricate bearings of fans.			
11	3	3	Inspect fans for normal operation.			
12	3	3	Make sure that all fans, frequently inoperative in unit heaters, fan coil units, and unit ventilators are running normally to increase the heat transfer rate from heating coils.			
13	3	3	Inspect ductwork for air leakage. Seal all leaks by taping or caulking.			
14	3	3	Clean evaporator and condenser coils of air conditioning units.			
15	3	3	Keep air intake louvers, filters and controls clear of air conditioning units.			
16	4	1	Instruct occupants and maintenance personnel to switch off all lights when they are not needed.			
17	4	3	Clean fixtures and lamps regularly.			
18	4	4	Use lower wattage lamps to provide the necessary illumination.			

Note 1: Date of Implementation should only be completed as the recommendation is implemented. The mini-audit report may be submitted to the Minnesota Energy Agency before the "Date of Implementation" has been completed.

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NEW OPPORTUNITIES

Instructions: Read through the energy conservation recommendation list provided. Then walk through the building with the list. Examine suggested maintenance and operational changes, and any other low cost energy conservation measures, that pertain to the facility. As you go along record the item number, the classification number of the recommendation, and the new mini-audit opportunity. The description of the mini-audit opportunity should contain the specific building location where the recommendation applies, if applicable. Any recommendation not found on the list may also be included. For those other recommendations, assign an appropriate classification number from the classification scheme for energy conservation opportunities listed on pages 25 through 37. The date of implementation should only be completed as the recommendation is implemented. *This section of the mini-audit report should be completed by the mini-audit team during the building walk-through.*

ITEM NO	CLASSIFICATION NO		NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS	ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS		OPTIONAL:	OPTIONAL:	
19	4	4	Allow part of a lighting system to be turned off, while maintaining the necessary light.			
20	5	1	Keep records of the operating schedule, monthly energy consumption and purchase of any new equipment that affects energy consumption of efficiency of the building. These records will indicate the impact of energy conservation measures.			
21	5	1	Review the record books on a regular basis.			
22	6	2	The burner system of fossil-fuel water heaters should be kept clean and in good operating condition.			
23	7	3	Clean air-sides, remove soot, and scrape scale in forced warm air furnaces.			
24	7	4	Maintain the lowest possible hot water temperatures which will meet domestic hot water needs.			
25	7	4	Clean fileters regularly in forced warm air units to reduce the operating time of the furnace.			
26	7	4	Turn off gas pilots for furnaces boilers and space heaters during the non-heating months and during long unoccupied periods.			
27	7	4	Keep all heat exchanger surfaces clean. Check air-to-fuel ratio and adjust as necessary on unit heaters.			
28	7	4	Follow guidelines suggested for fan and motor maintenance.			
29	7	4	Inspect casing for air leaks and seal as necessary on unit heaters.			

Note 1 Date of Implementation should only be completed as the recommendation is implemented. The mini-audit report may be submitted to the Minnesota Energy Agency before the "Date of Implementation" has been completed.

Note 2 Reproduce this page as necessary.

MINI-AUDIT REPORT

FORM NO. MIN-01

A — CONTACT DATA

BUILDING NAME		NAME OF ORGANIZATION	DATE
Art Center		City of Bloomington	5-23-80
BUILDING ADDRESS		**ADDRESS**	
10206 Penn Avenue South		2215 West Old Shakopee Road	
CITY	**ZIP CODE**	**CITY**	**ZIP CODE**
Bloomington, MN	55431	Bloomington, MN	55431
PERSON COMPLETING FORM	**TELEPHONE**	**CONTACT PERSON**	**TELEPHONE**
Randy Smith	(612) 935-6901	Arthur Jensen	(612) 881-5811

B — BUILDING ELIGIBILITY CODE

Instructions: For blocks 1 and 2 check the box which best fits the building ownership conditions. For block 3 determine which of the four categories describes the building type and then within the category check off the sub category befitting the building function.

1. OWNERSHIP TYPE
   - [X] Public (PUB)
   - [ ] Non-Profit Association (NAP)

2. ULTIMATE OWNER
   - [ ] County (CNTY)
   - [X] City (CITY)
   - [ ] Township (TOWN)
   - [ ] State (STAT)
   - [ ] Public School (PUSC)
   - [ ] Private School (PRSC)
   - [ ] Non-Profit Association (NPAP)
   - [ ] Indian Tribe (INDN)

3a. SCHOOLS
   - [ ] Elementary (SCHL-ELM)
   - [ ] Secondary (SCHL-SECD)
   - [ ] Coll. or Univ. (SCHL-POST)
   - [ ] Vocational (SCHL-VOCL)
   - [ ] Education Agency (SCHL-ADMN)
   - [ ] Administration (SCHL-ADMN)
   - [ ] OTHER (SCHL-OTHR)

b. PUBLIC CARE
   - [ ] Nursing Home (PBCR-NURS)
   - [ ] Long Term Care (PBCR-TERM)
   - [ ] Rehab. Facility (PBCR-RHAB)
   - [ ] Public Health Ctr. (PBCR-HCTR)
   - [ ] Res. Child Care Ctr. (PBCR-RCCC)

c. LOCAL GOVERNMENT
   - [ ] Office (LOCG-OFFC)
   - [ ] Storage (LOCG-STRG)
   - [ ] Service (LOCG-SERV)
   - [ ] Library (LOCG-LBRY)
   - [ ] Police (LOCG-PLCE)
   - [ ] Fire (LOCG-FIRE)
   - [X] OTHER (LOCG-OTHR)

d. HOSPITALS
   - [ ] General (HOSP-GENL)
   - [ ] Tuberculosis (HOSP-TUBR)
   - [ ] OTHER (HOSP-OTHR)

C — MINI-AUDIT FUNDING REQUEST

Instructions: With reference to page 23 entitled Funding Information, determine if the facilities are eligible for both Federal and State funding or just Federal funding. then answer the questions correctly for the situation. This section must be signed and dated by the head of the organization.

If eligible for both Federal and State Funding:
Have you received a mini-audit grant before? [ ] Yes [X] No
Have you previously applied for mini-audit funding? [X] Yes [ ] No
Do you wish to apply for mini-audit funding? [ ] Yes [X] No

Date: _____

Name: _____

Signature: _____

If eligible for Federal funding only:
Have you received a mini-audit grant before? [ ] Yes [ ] No
Have you previously applied for mini-audit funding? [ ] Yes [ ] No
Do you wish to apply for mini-audit funding? [ ] Yes [ ] No
The 50% match for Federal funds will come from: (Use additional sheets if necessary.)

Date: _____

Name: _____

Signature: _____

D ENERGY REPORT CHECK-OFF

Check the type of energy report which was completed and submitted prior to this mini-audit report.

☐ Elementary School Energy Report (Form No. ED-00444-02)
☐ Secondary School Energy Report (Form No. ED-00445-02)
☒ Existing Building Energy Report (Form No. EN-00041-01)

If an energy report has not been completed previous to this mini-audit report, one must be included with this report. Elementary, secondary, and vocational schools should use form ED-00444-02 or form ED-00445-02, depending on building complexity. All other buildings should use the existing building energy report, form EN-00041-01.

E MINI-AUDIT STATEMENTS

Instructions: This section is to be completed and signed by a registered professional engineer or by a certified mini-auditor who has successfully completed the State of Minnesota's Mini-Audit Procedures Course. This section should be completed after this mini-audit report and an energy report are completed. All blanks must be filled in.

I have reviewed the energy report and/or the energy report results for this building. I found all information contained therein to be correct *OR* I have corrected any misinformation on the energy report which will be resubmitted with this mini-audit report to the Minnesota Energy Agency.

I am not directly responsible for the day to day operations of this building being audited.

I have fully disclosed my financial interests relating to this mini-audit and any energy conservation measures considered by this audit.

I have walked through this building and have found the recommendations listed in section I of this mini-audit report to be the operations and maintenance changes, and low cost energy conservation measures, which would reduce energy consumption in this building.

I have made a rough estimate, in section G, of the range of savings which may result from the implementation of all of the mini-audit opportunities listed in section I. I am not responsible if the actual savings resulting from this mini-audit do not fall within the estimated range.

Based on actual records, the energy conservation operating and maintenance procedures listed in section K did not (did, did not) save at least 20% of the building's energy consumption as specified in section I.

Based upon my observation of the physical characteristics of this building and the building's major energy using systems, I recommend that this should not (should, should not) be the subject of a maxi-audit.
I realize that this is not a final judgement, that the State reserves the right to make the maxi-audit funding determination based on this mini-audit report and other criteria.

Based upon the information in section E and the information referred to in section F, I recommend that this building should not (should, should not) undergo further solar conversion analysis, and/or should not (should, should not) undergo further analysis of the renewable resources — waste, wind, wood. (Circle proper resources)

In my judgement, as a mini-auditor, all of the above statements are true and correct.

Randy Smith
Mini-Auditor's Name (Print or Type)

Randy Smith 206
Signature

Rieke Carroll Muller Assoc., Inc.
Firm Name (if none, enter none)

P.O. Box 130 Hopkins, MN 55343
Address

(612) 935-6901
Phone

5-23-80
Date

Witnessed by:

Building Organizational Authority (Print or Type)

Signature

Date

F AUDIT TEAM

NAME	POSITION	ORGANIZATION
Randy Smith	Certified Mini-Auditor	Rieke Carroll Muller Assoc., Inc.
Reinert Ege	Maintenance Engineer	City of Bloomington

G BUILDING INFORMATION

BRIEF DESCRIPTION OF GENERAL BUILDING CONDITION (i.e. type, and function)
Good, Art School

MAJOR CHANGES PLANNED WITHIN NEXT 15 YEARS (i.e. demolition, rehabilitation, conversion from one building type to another)
None

STRUCTURAL COMPONENTS OF ROOF (i.e. metal beams, wooden rafters, concrete)
Wooden Rafters

ROOFING MATERIAL (i.e. tar and gravel, shingles, tile)
Tar and Gravel

H SOLAR POTENTIAL INFORMATION

INSTRUCTIONS: Correctly answer the following questions for the building being mini-audited.

Is there open land adjacent to the building?
☒ Yes ☐ No

Solar collectors need to be located in an unshaded area. Is the roof of the building and the south facing wall unshaded between the hours of 9 a.m. and 3 p.m.?
Roof: ☒ Yes ☐ No
South facing Wall: ☐ Yes ☒ No

If the roof or wall are partly shaded, what percentage of the surface is unshaded?
% of roof unshaded _____ %
% of south facing wall unshaded 40 %

What is the overall shape of the building?
☐ square ☒ rectangle ☐ H-shaped ☐ E-shaped ☐ other (specify) _____

Is the roof of the building flat or pitched?
☒ flat ☐ pitched

If pitched, what is the compass orientation of the ridgeline? _____

If pitched, what is the angle that the roof makes with horizontal? _____°

Are there large obstructions on the roof such as chimneys, rooms for mechanical equipment, ventilating units, water towers, etc?
☐ Yes ☒ No

What is the exterior facing material for the south facing wall? Concrete Bolck

What percentage of the south facing wall is glass? 5 %

Is the building's space heating equipment located within or on the building? (A no answer indicates the equipment is in a separate building.)
☒ Yes ☐ No

If the space heating equipment is inside the building, where is it located?
☒ Ground Floor ☐ Basement ☐ Roof ☐ Other (specify) _____

Is the building's water heating equipment located within the building? (A no answer indicates the equipment is in a separate building.)
☒ Yes ☐ No

If the water heating equipment is inside the building, where is it located?
☒ Ground Floor ☐ Basement ☐ Other (specify) _____

Is the water heating system a central system, does it consist of multiple units, or is it a combination of the central and multiple units?
☒ Central ☐ Multiple ☐ Combination

I — 20% SAVINGS DATA

Instructions: Enter the total energy used of each fuel type for the base period and the year when there was a 20% or greater energy savings. Indicate the unit of measure. Enter the appropriate conversion factor from Appendix B to convert energy usage into Btu's. Be sure to enter the fiscal years of which the data applies. Refer to pages 7 and 15 for a complete explanation of this section.

BASE PERIOD YEAR — Fiscal Year _____

ENERGY TYPE	ENERGY USAGE	CONVERSION FACTOR	BTU USAGE
Electricity			
Fuel 1			
Fuel 2			
TOTAL			

20% SAVINGS YEAR — Fiscal Year _____

ENERGY TYPE	ENERGY USAGE	CONVERSION FACTOR	BTU USAGE
Electricity			
Fuel 1			
Fuel 2			
TOTAL			

J — SAVINGS ESTIMATION

Instructions: This section is to be completed by the mini-auditor after the walk-thru portion of the mini-audit. First, check the appropriate boxes which state the roughly estimated range of the percent of total electrical and fuel consumption which would be saved resulting from the implementation of all of the new mini-audit opportunities listed in section L. Secondly, calculate the range of energy and cost savings by multiplying the estimated percentages by the annual electrical and fuel consumption data on the energy report.

1

Check two boxes in each category —

Range of Electrical Savings — ☒ 0% ☒ 5% ☐ 10% ☐ 15% ☐ 20% ☐ 25% ☐ other (specify) _____

Range of Fuel Savings — ☐ 0% ☒ 5% ☒ 10% ☐ 15% ☐ 20% ☐ 25% ☐ other (specify) _____

2

Calculate ranges of energy and cost savings —

Range of Electrical Savings

	% Range		Annual Electrical Consumption		Range of Energy Savings		% Range		Annual Electrical Dollars Spent		Range of Electrical Dollars Savings
lower bound	0 %	x	61380 kwh	=	0 kwh,		0 %	x	$3368.66	=	$ 0
	to				to		to				to
upper bound	5 %	x	61380 kwh	=	3069 kwh,		5 %	x	$3368.66	=	$ 168.43

3

Range of Fuel Savings

	% Range		Annual Fuel Consumption		Range of Fuel Savings		% Range		Annual Fuel Dollars Spent		Range of Fuel Dollars Savings
lower bound	5 %	x	69.3×10^6 Btu	=	34.7×10^5 Btu,		5 %	x	$1648.04	=	$ 82.40
	to				to		to				to
upper bound	10 %	x	69.3×10^6 Btu	=	69.3×10^5 Btu,		10 %	x	$1648.04	=	$ 164.80

The mini-auditor is not responsible if actual savings resulting from the implementation of the energy conservation opportunities listed in section I do not fall between the roughly estimated ranges which are specified.

K

Instructions: Read through the list of energy conservation opportunities provided. As you read through the items, list below those items which have already been undertaken in your facility. The description of the past energy conservation action should contain the specific building location where the recommendation applies, if applicable. Indicate the date of implementation of each item and its classification number. Energy conserving items which have been undertaken and are not on the list provided should also be included along with their appropriate classification numbers. The classification number should be taken from the classification scheme for energy conservation opportunities listed on pages 25 through 37. *This section of the mini-audit report should be completed by building personnel prior to the walk-through by the mini-auditor.*

ITEM NO.	CLASSIFICATION NO.		PAST ENERGY CONSERVATION ACTIONS	OPTIONAL: ENERGY SAVINGS	OPTIONAL: ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS				

Note: Reproduce this page as necessary

NEW OPPORTUNITIES

Instructions: Read through the energy conservation recommendation list provided. Then walk through the building with the list. Examine the suggested maintenance and operational changes, and any other low cost energy conservation measures, that pertain to the facility. As you go along, record the item number, the classification number of the recommendation, and the new mini-audit opportunity. The description of the mini-audit opportunity should contain the specific building location where the recommendation applies, if applicable. Any recommendation not found on the list may also be included. For those other recommendations, assign an appropriate classification number from the classification scheme for energy conservation opportunities listed on pages 25 through 37. The date of implementation should only be completed as the recommendation is implemented. *This section of the mini-audit report should be completed by the mini-audit team during the building walk-through.*

ITEM NO.	CLASSIFICATION NO. MAJOR CLASS	CLASSIFICATION NO. SUB CLASS	NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS OPTIONAL:	ENERGY COST SAVINGS OPTIONAL:	DATE OF IMPLEMENTATION
1	1	1	Keep all controls free of dust.			
2	2	1	Check the amount of insulation in the ceiling.			
3	2	1	Add insulation above the ceilings if needed.			
4	2	2	Weatherstrip all exterior doors including garage or delivery doors.			
5	2	2	Replace an existing door with one of a higher R-value.			
6	2	8	Caulk all cracks that allow air and moisture into the building.			
7	2	10	Inspect window closing and locking devices to insure a tight window.			
8	2	10	Replace single glazed windows with double glazed thermopanes.			
9	3	1	Check the calibration of all controllers and devices for proper settings and operations.			
10	3	1	Raise the supply air temperature for cooling to the highest point necessary to provide minimum required cooling.			
11	3	1	Lower the supply air temperature for heating to the lowest point necessary to provide minimum required heating.			
12	3	1	65°F maximum occupied, 60°F maximum unoccupied during the heating season.			
13	3	1	78°F minimum when occupied and no cooling when unoccupied during the cooling season.			
14	3	2	Clean and remove obstructions from all room air outlets and inlets (diffusers, registers and grillers). They should be kept clean and free of all dirt and foreign materials.			
15	3	3	Check for excessive noise and vibration in fans. Determine cause and correct as necessary.			
16	3	3	Inspect and lubricate bearings of fan motors.			
17	3	3	Inspect fans for normal operation.			
18	3	3	Keep condenser coil face clean to permit proper air flow.			

Note 1: Date of Implementation should only be completed as the recommendation is implemented. The mini-audit report may be submitted to the Minnesota Energy Agency before the "Date of Implementation" has been completed.

Note 2: Reproduce this page as necessary.

F NEW OPPORTUNITIES

Instructions: Read through the energy conservation recommendation list provided. Then walk through the building with the list. Examine ... suggested maintenance and operational changes, and any other low cost energy conservation measures, that pertain to the facility. As you go along record the item number, the classification number of the recommendation, and the new mini-audit opportunity. The description of the mini-audit opportunity should contain the specific building location where the recommendation applies, if applicable. Any recommendation not found on the list may also be included. For those other recommendations, assign an appropriate classification number from the classification scheme for energy conservation opportunities listed on pages 25 through 37. The date of implementation should only be completed as the recommendation is implemented. *This section of the mini-audit report should be completed by the mini-audit team during the building walk-through.*

ITEM NO	CLASSIFICATION NO		NEW MINI-AUDIT OPPORTUNITIES	OPTIONAL: ENERGY SAVINGS	OPTIONAL: ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS				
19	3	3	Inspect ductwork for air leakage. Seal all leaks by taping or caulking.			
20	3	3	Inspect damper blades and linkages, Clean, oil and adjust.			
21	3	3	Clean or replace filters periodically.			
22	4	1	Instruct occupants and maintenance personnel to switch off all lights when they are not needed.			
23	4	3	Clean fixtures and lamps regularly.			
24	4	4	Use lower wattage lamps to provide the necessary illumination.			
25	4	4	Allow part of a lighting system to be turned off, while maintaining the necessary light.			
26	5	1	Keep records of the operating schedule, monthly energy consumption and purchase of any new equipment that affects energy consumption of efficiency of the building. These records will indicate the impact of energy conservation measures.			
27	5	1	Review the record books on a regular basis.			
28	6	2	All electric heating equipment should be checked for corroded elements and loose connections and repaired as required.			
29	7	3	Clean air-sides, remove soot, and scrape scale in forced warm air furnaces.			
30	7	3	If the firing rate of gas or oil burners is too high, it causes short cycling and excessive fule consumption. Too low a rate requires constant operating and delivers inadequate heat to the spaces.			
31	7	4	Maintain the lowest possible hot water temperature which will meet domestic hot water needs.			
32	7	4	Turn off gas pilots for furnaces, boilers, and space heaters during the non-heating months and during long unoccupied periods.			

Note 1 Date of Implementation should only be completed as the recommendation is implemented. The mini-audit report may be submitted to the Minnesota Energy Agency before the "Date of Implementation" has been completed.

Note 2 Reproduce this page as necessary.

MINI-AUDIT REPORT

FORM NO. MIN-01

A — CONTACT DATA

BUILDING NAME		NAME OF ORGANIZATION		DATE
Historical Museum		City of Bloomington		5-23-80
BUILDING ADDRESS		**ADDRESS**		
10200 Penn Avenue South		2215 West Old Shakopee Drive		
CITY	**ZIP CODE**	**CITY**		**ZIP CODE**
Bloomington, MN	55431	Bloomington, MN		55431
PERSON COMPLETING FORM	**TELEPHONE**	**CONTACT PERSON**		**TELEPHONE**
Randy Smith	(612) 935-6901	Arthur Jensen		(612) 881-5811

B — BUILDING ELIGIBILITY CODE

Instructions: For blocks 1 and 2 check the box which best fits the building ownership conditions. For block 3 determine which of the four categories describes the building type and then within the category check off the sub category befitting the building function.

1. OWNERSHIP TYPE
   - [X] Public (PUB)
   - [ ] Non-Profit Association (NAP)

2. ULTIMATE OWNER
   - [ ] County (CNTY)
   - [X] City (CITY)
   - [ ] Township (TOWN)
   - [ ] State (STAT)
   - [ ] Public School (PUSC)
   - [ ] Private School (PRSC)
   - [ ] Non-Profit Association (NPAP)
   - [ ] Indian Tribe (INDN)

3a. SCHOOLS
   - [ ] Elementary (SCHL-ELM)
   - [ ] Secondary (SCHL-SECD)
   - [ ] Coll. or Univ. (SCHL-POST)
   - [ ] Vocational (SCHL-VOCL)
   - [ ] Education Agency (SCHL-ADMN)
   - [ ] Administration (SCHL-ADMN)
   - [ ] OTHER (SCHL-OTHR)

b. PUBLIC CARE
   - [ ] Nursing Home (PBCR-NURS)
   - [ ] Long Term Care (PBCR-TERM)
   - [ ] Rehab. Facility (PBCR-RHAB)
   - [ ] Public Health Ctr. (PBCR-HCTR)
   - [ ] Res. Child Care Ctr. (PBCR-RCCC)

c. LOCAL GOVERNMENT
   - [ ] Office (LOCG-OFFC)
   - [ ] Storage (LOCG-STRG)
   - [ ] Service (LOCG-SERV)
   - [ ] Library (LOCG-LBRY)
   - [ ] Police (LOCG-PLCE)
   - [ ] Fire (LOCG-FIRE)
   - [X] OTHER (LOCG-OTHR)

d. HOSPITALS
   - [ ] General (HOSP-GENL)
   - [ ] Tuberculosis (HOSP-TUBR)
   - [ ] OTHER (HOSP-OTHR)

C — MINI-AUDIT FUNDING REQUEST

Instructions: With reference to page 23 entitled Funding Information, determine if the facilities are eligible for both Federal and State funding or just Federal funding. then answer the questions correctly for the situation. This section must be signed and dated by the head of the organization.

If eligible for both Federal and State Funding:
Have you received a mini-audit grant before? [ ] Yes [X] No
Have you previously applied for mini-audit funding? [X] Yes [ ] No
Do you wish to apply for mini-audit funding? [ ] Yes [X] No

Date: _____

Name: _____

Signature: _____

If eligible for Federal funding only:
Have you received a mini-audit grant before? [ ] Yes [ ] No
Have you previously applied for mini-audit funding? [ ] Yes [ ] No
Do you wish to apply for mini-audit funding? [ ] Yes [ ] No
The 50% match for Federal funds will come from: (Use additional sheets if necessary.)

Date _____

Name: _____

Signature: _____

D ENERGY REPORT CHECK-OFF

Check the type of energy report which was completed and submitted prior to this mini-audit report.

☐ Elementary School Energy Report (Form No. ED-00444-02)
☐ Secondary School Energy Report (Form No. ED-00445-02)
☒ Existing Building Energy Report (Form No. EN-00041-01)

If an energy report has not been completed previous to this mini-audit report, one must be included with this report. Elementary, secondary, and vocational schools should use form ED-00444-02 or form ED-00445-02, depending on building complexity. All other buildings should use the existing building energy report, form EN-00041-01.

E MINI-AUDIT STATEMENTS

Instructions: This section is to be completed and signed by a registered professional engineer or by a certified mini-auditor who has successfully completed the State of Minnesota's Mini-Audit Procedures Course. This section should be completed after this mini-audit report and an energy report are completed. All blanks must be filled in.

I have reviewed the energy report and/or the energy report results for this building. I found all information contained therein to be correct *OR* I have corrected any misinformation on the energy report which will be resubmitted with this mini-audit report to the Minnesota Energy Agency.

I am not directly responsible for the day to day operations of this building being audited.

I have fully disclosed my financial interests relating to this mini-audit and any energy conservation measures considered by this audit.

I have walked through this building and have found the recommendations listed in section I of this mini-audit report to be the operations and maintenance changes, and low cost energy conservation measures, which would reduce energy consumption in this building.

I have made a rough estimate, in section G, of the range of savings which may result from the implementation of all of the mini-audit opportunities listed in section I. I am not responsible if the actual savings resulting from this mini-audit do not fall within the estimated range.

Based on actual records, the energy conservation operating and maintenance procedures listed in section K did not (did, did not) save at least 20% of the building's energy consumption as specified in section I.

Based upon my observation of the physical characteristics of this building and the building's major energy using systems, I recommend that this should not (should, should not) be the subject of a maxi-audit.
I realize that this is not a final judgement, that the State reserves the right to make the maxi-audit funding determination based on this mini-audit report and other criteria.

Based upon the information in section E and the information referred to in section F, I recommend that this building should not (should, should not) undergo further solar conversion analysis, and/or should not (should, should not) undergo further analysis of the renewable resources — waste, wind, wood. (Circle proper resources)

In my judgement, as a mini-auditor, all of the above statements are true and correct.

Witnessed by:

Randy Smith
Mini-Auditor's Name (Print or Type)

Randy Smith 206
Signature

Rieke Carroll Muller Assoc., Inc.
Firm Name (if none, enter none)

P.O. Box 130 Hopkins MN 55343
Address

(612) 935-6901
Phone

5-23-80
Date

Building Organizational Authority (Print or Type)

Signature

Date

F AUDIT TEAM

NAME	POSITION	ORGANIZATION
Randy Smith	Certified Mini-Auditor	Rieke Carroll Muller Assoc., Inc
Reinert Ege	Maintenance Engineer	City of Bloomington

G BUILDING INFORMATION

BRIEF DESCRIPTION OF GENERAL BUILDING CONDITION (i.e. type, and function)
Good

MAJOR CHANGES PLANNED WITHIN NEXT 15 YEARS (i.e. demolition, rehabilitation, conversion from one building type to another)
None

STRUCTURAL COMPONENTS OF ROOF (i.e. metal beams, wooden rafters, concrete)
Wooden Rafters

ROOFING MATERIAL (i.e. tar and gravel, shingles, tile)
Tar and Gravel

H SOLAR POTENTIAL INFORMATION

INSTRUCTIONS: Correctly answer the following questions for the building being mini-audited.

Is there open land adjacent to the building?
☐ Yes ☒ No

Solar collectors need to be located in an unshaded area. Is the roof of the building and the south facing wall unshaded between the hours of 9 a.m. and 3 p.m.?
Roof: ☒ Yes ☐ No
South facing Wall: ☐ Yes ☒ No

If the roof or wall are partly shaded, what percentage of the surface is unshaded?
% of roof unshaded _____ %
% of south facing wall unshaded 80 %

What is the overall shape of the building?
☐ square ☒ rectangle ☐ H-shaped ☐ E-shaped ☐ other (specify) _____

Is the roof of the building flat or pitched?
☐ flat ☒ pitched

If pitched, what is the compass orientation of the ridgeline? North - South

If pitched, what is the angle that the roof makes with horizontal? 70 °

Are there large obstructions on the roof such as chimneys, rooms for mechanical equipment, ventilating units, water towers, etc?
☐ Yes ☒ No

What is the exterior facing material for the south facing wall? Stucco

What percentage of the south facing wall is glass? 10 %

Is the building's space heating equipment located within or on the building? (A no answer indicates the equipment is in a separate building.)
☒ Yes ☐ No

If the space heating equipment is inside the building, where is it located?
☐ Ground Floor ☒ Basement ☐ Roof ☐ Other (specify) _____

Is the building's water heating equipment located within the building? (A no answer indicates the equipment is in a separate building.)
☒ Yes ☐ No

If the water heating equipment is inside the building, where is it located?
☐ Ground Floor ☒ Basement ☐ Other (specify) _____

Is the water heating system a central system, does it consist of multiple units, or is it a combination of the central and multiple units?
☒ Central ☐ Multiple ☐ Combination

I — 20% SAVINGS DATA

Instructions: Enter the total energy used of each fuel type for the base period and the year when there was a 20% or greater energy savings. Indicate the unit of measure. Enter the appropriate conversion factor from Appendix B to convert energy usage into Btu's. Be sure to enter the fiscal years of which the data applies. Refer to pages 7 and 15 for a complete explanation of this section.

BASE PERIOD YEAR — Fiscal Year _____

ENERGY TYPE	ENERGY USAGE	CONVERSION FACTOR	BTU USAGE
Electricity			
Fuel 1			
Fuel 2			
TOTAL			

20% SAVINGS YEAR — Fiscal Year _____

ENERGY TYPE	ENERGY USAGE	CONVERSION FACTOR	BTU USAGE
Electricity			
Fuel 1			
Fuel 2			
TOTAL			

J — SAVINGS ESTIMATION

Instructions: This section is to be completed by the mini-auditor after the walk-thru portion of the mini-audit. First, check the appropriate boxes which state the roughly estimated range of the percent of total electrical and fuel consumption which would be saved resulting from the implementation of all of the new mini-audit opportunities listed in section L. Secondly, calculate the range of energy and cost savings by multiplying the estimated percentages by the annual electrical and fuel consumption data on the energy report.

1 Check two boxes in each category —

Range of Electrical Savings — ☒ 0% ☒ 5% ☐ 10% ☐ 15% ☐ 20% ☐ 25% ☐ other (specify) _____

Range of Fuel Savings — ☐ 0% ☒ 5% ☒ 10% ☐ 15% ☐ 20% ☐ 25% ☐ other (specify) _____

2 Calculate ranges of energy and cost savings —

Range of Electrical Savings

	% Range		Annual Electrical Consumption		Range of Energy Savings		% Range		Annual Electrical Dollars Spent		Range of Electrical Dollars Savings
lower bound	0 %	x	20234 kwh	=	0 kwh,		0 %	x	$ 833.46	=	$ 0
	to				to		to				to
upper bound	5 %	x	20234 kwh	=	1011.7 kwh,		5 %	x	$ 833.46	=	$ 41.67

3 **Range of Fuel Savings**

	% Range		Annual Fuel Consumption		Range of Fuel Savings		% Range		Annual Fuel Dollars Spent		Range of Fuel Dollars Savings
lower bound	5 %	x	65.5×10^6 Btu	=	32.7×10^5 Btu,		5 %	x	$1454.63	=	$ 72.73
	to				to		to				to
upper bound	10 %	x	65.5×10^6 Btu	=	65.6×10^5 Btu,		10 %	x	$1454.63	=	$ 145.46

The mini-auditor is not responsible if actual savings resulting from the implementation of the energy conservation opportunities listed in section I do not fall between the roughly estimated ranges which are specified.

K

Instructions: Read through the list of energy conservation opportunities provided. As you read through the items, list below those items which have already been undertaken in your facility. The description of the past energy conservation action should contain the specific building location where the recommendation applies, if applicable. Indicate the date of implementation of each item and its classification number. Energy conserving items which have been undertaken and are not on the list provided should also be included along with their appropriate classification numbers. The classification number should be taken from the classification scheme for energy conservation opportunities listed on pages 25 through 37. *This section of the mini-audit report should be completed by building personnel prior to the walk-through by the mini-auditor.*

ITEM NO.	CLASSIFICATION NO.		PAST ENERGY CONSERVATION ACTIONS	ENERGY SAVINGS	ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS		OPTIONAL:	OPTIONAL:	
1	2	1	Added insulation in attic spaces.			Fall 1979

Note: Reproduce this page as necessary

NEW OPPORTUNITIES

Instructions: Read through the energy conservation recommendation list provided. Then walk through the building with the list. Examine the suggested maintenance and operational changes, and any other low cost energy conservation measures, that pertain to the facility. As you go along, record the item number, the classification number of the recommendation, and the new mini-audit opportunity. The description of the mini-audit opportunity should contain the specific building location where the recommendation applies, if applicable. Any recommendation not found on the list may also be included. For those other recommendations, assign an appropriate classification number from the classification scheme for energy conservation opportunities listed on pages 25 through 37. The date of implementation should only be completed as the recommendation is implemented. *This section of the mini-audit report should be completed by the mini-audit team during the building walk-through.*

ITEM NO	CLASSIFICATION NO.		NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS	ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS		OPTIONAL:	OPTIONAL:	
1	1	1	Keep all controls free of dust.			
2	2	2	Keep all doors between unheated corridors and heated spaces closed.			
3	2	8	Caulk all cracks that allow air and moisture into the building.			
4	2	10	Inspect window closing and locking devices to insure a tight window.			
5	3	1	Check operation of entire heating/ cooling control system, including control valves and dampers.			
6	3	1	Check the calibration of all controllers and devices for proper settings and operations.			
7	3	1	Reduce the hours of occupancy to the greatest extent possible during periods of severely cold weather.			
8	3	1	Raise the supply air temperature for cooling to the highest point necessary to provide minimum required cooling.			
9	3	1	Lower the hot water temperature for heating to the lowest point necessary to provide minimum required heating.			
10	3	1	65^{0}F maximum occupied, 60^{0}F maximum unoccupied during the heating season.			
11	3	1	78^{0}F minimum when occupied and no cooling when unoccupied during the cooling season.			
12	3	1	Provide atmospheric cooling as long as possible.			
13	3	2	Keep radiators free from blockage. a one foot clearance in front of convectors, radiators, or registers is desirable. Heating systems, particularly hot water of electric baseboard radiators and low level warm air supply registers, work more efficiently if they are not blocked by furniture. Keep all books or other impediments from blocking heat or air delivery from the top of horizontal shelves or			

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Note 2: Reproduce this page as necessary.

NEW OPPORTUNITIES

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ITEM NO.	CLASSIFICATION NO. MAJOR CLASS	CLASSIFICATION NO. SUB CLASS	NEW MINI-AUDIT OPPORTUNITIES	OPTIONAL: ENERGY SAVINGS	OPTIONAL: ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
			cabinets which enclose radiators, fan coils, unit ventilators or induction units.			
14	3	2	Vent all hot water radiators and convectors to assure that water will completely fill the interior passages.			
15	3	2	Clean and remove obstructions from all room air outlets and inlets (diffusers, registers and grillers). They should be kept clean and free of all dirt and foreign materials.			
16	3	3	Inspect fans for normal operation.			
17	3	3	Keep condenser coil face clean to permit proper air flow.			
18	3	3	Inspect ductwork for air leakage. Seal all leaks by taping or caulking.			
19	3	3	Inspect damper blades and linkages. Clean, oil and adjust.			
20	3	3	Take special note of fresh air dampers making sure that they close tightly and be sure to repair, replace or provide blade edge gaskets and gasketing at the end of blades.			
21	3	3	Clean or replace filters periodically.			
22	4	1	Instruct occupants and maintenance personnel to switch off all lights when they are not needed.			
23	4	3	Clean fixtures and lamps regularly.			
24	4	4	Use lower wattage lamps to provide the necessary illumination.			
25	4	4	Allow part of a lighting system to be turned off, while maintaining the necessary light.			
26	5	1	Keep records of the operating schedule, monthly energy consumption and purchase of any new equipment that affects energy consumption of efficiency of the building. These records will indicate the impact of energy conservation measures.			

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NEW OPPORTUNITIES

Instructions: Read through the energy conservation recommendation list provided. Then walk through the building with the list. Examine the suggested maintenance and operational changes, and any other low cost energy conservation measures, that pertain to the facility. As you go along, record the item number, the classification number of the recommendation, and the new mini-audit opportunity. The description of the mini-audit opportunity should contain the specific building location where the recommendation applies, if applicable. Any recommendation not found on the list may also be included. For those other recommendations, assign an appropriate classification number from the classification scheme for energy conservation opportunities listed on pages 25 through 37. The date of implementation should only be completed as the recommendation is implemented. *This section of the mini-audit report should be completed by the mini-audit team during the building walk-through.*

OPTIONAL: OPTIONAL:

ITEM NO.	CLASSIFICATION NO. MAJOR CLASS	CLASSIFICATION NO. SUB CLASS	NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS	ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
27	5	1	Review the record books on a regular basis.			
28	6	2	All electric heating equipment should be checked for corroded elements and loose connections and repaired as required.			
29	7	3	If the firing rate of gas or oil burners is too high, it causes short cycling and excessive fuel consumption. Too low a rate requires constant operating and delivers inadequate heat to the spaces. If the boiler is oversized, adjust the firing rate to the building load, not the boiler.			
30	7	4	Schedule boiler blowdown on an as-needed basis rather than on a fixed timetable. Smaller, more frequent blowdown is preferable to larger, less frequent blowdown.			
31	7	4	Maintain the lowest possible hot water temperature which will meet space or domestic hot water needs.			
32	7	4	If there are no indoor-outdoor modulating controls, raise or lower the operating temperature of hot water systems to conform to outdoor conditions. For example, operate a boiler at 120°F with outdoor temperature at 60°F, and raise the level to 160°F when it is 20°F outdoors.			
33	7	4	Maintain water level or pressure to radiators or coils on the highest level of the building.			
34	7	4	Turn off gas pilots for furnaces, boilers, and space heaters during the non-heating months and during long unoccupied periods.			

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Note 2: Reproduce this page as necessary.

MINI-AUDIT REPORT

FORM NO. MIN-01

A — CONTACT DATA

BUILDING NAME		NAME OF ORGANIZATION		DATE
Fire Station #1		City of Bloomington		5-17-80
BUILDING ADDRESS		**ADDRESS**		
600 West 95th Street		2215 West Old Shakopee Road		
CITY	**ZIP CODE**	**CITY**	**ZIP CODE**	
Bloomington, MN	55420	Bloomington, MN	55431	
PERSON COMPLETING FORM	**TELEPHONE**	**CONTACT PERSON**	**TELEPHONE**	
Randy Smith	(612) 935-6901	Arthur Jensen	(612) 881-5811	

B — BUILDING ELIGIBILITY CODE

Instructions: For blocks 1 and 2 check the box which best fits the building ownership conditions. For block 3 determine which of the four categories describes the building type and then within the category check off the sub category befitting the building function.

1. OWNERSHIP TYPE
   - ☒ Public (PUB)
   - ☐ Non-Profit Association (NAP)

2. ULTIMATE OWNER
   - ☐ County (CNTY)
   - ☒ City (CITY)
   - ☐ Township (TOWN)
   - ☐ State (STAT)
   - ☐ Public School (PUSC)
   - ☐ Private School (PRSC)
   - ☐ Non-Profit Association (NPAP)
   - ☐ Indian Tribe (INDN)

3a. SCHOOLS
   - ☐ Elementary (SCHL-ELM)
   - ☐ Secondary (SCHL-SECD)
   - ☐ Coll. or Univ. (SCHL-POST)
   - ☐ Vocational (SCHL-VOCL)
   - ☐ Education Agency (SCHL-ADMN)
   - ☐ Administration (SCHL-ADMN)
   - ☐ OTHER (SCHL-OTHR)

b. PUBLIC CARE
   - ☐ Nursing Home (PBCR-NURS)
   - ☐ Long Term Care (PBCR-TERM)
   - ☐ Rehab. Facility (PBCR-RHAB)
   - ☐ Public Health Ctr. (PBCR-HCTR)
   - ☐ Res. Child Care Ctr. (PBCR-RCCC)

c. LOCAL GOVERNMENT
   - ☐ Office (LOCG-OFFC)
   - ☐ Storage (LOCG-STRG)
   - ☐ Service (LOCG-SERV)
   - ☐ Library (LOCG-LBRY)
   - ☐ Police (LOCG-PLCE)
   - ☒ Fire (LOCG-FIRE)
   - ☐ OTHER (LOCG-OTHR)

d. HOSPITALS
   - ☐ General (HOSP-GENL)
   - ☐ Tuberculosis (HOSP-TUBR)
   - ☐ OTHER (HOSP-OTHR)

C — MINI-AUDIT FUNDING REQUEST

Instructions: With reference to page 23 entitled Funding Information, determine if the facilities are eligible for both Federal and State funding or just Federal funding. then answer the questions correctly for the situation. This section must be signed and dated by the head of the organization.

If eligible for both Federal and State Funding:
- Have you received a mini-audit grant before? ☐ Yes ☒ No
- Have you previously applied for mini-audit funding? ☒ Yes ☐ No
- Do you wish to apply for mini-audit funding? ☐ Yes ☒ No

Date: _____

Name: _____

Signature: _____

If eligible for Federal funding only:
- Have you received a mini-audit grant before? ☐ Yes ☐ No
- Have you previously applied for mini-audit funding? ☐ Yes ☐ No
- Do you wish to apply for mini-audit funding? ☐ Yes ☐ No
- The 50% match for Federal funds will come from: (Use additional sheets if necessary.)

Date: _____

Name: _____

Signature: _____

D ENERGY REPORT CHECK-OFF

Check the type of energy report which was completed and submitted prior to this mini-audit report.

☐ Elementary School Energy Report (Form No. ED-00444-02)
☐ Secondary School Energy Report (Form No. ED-00445-02)
☒ Existing Building Energy Report (Form No. EN-00041-01)

If an energy report has not been completed previous to this mini-audit report, one must be included with this report. Elementary, secondary, and vocational schools should use form ED-00444-02 or form ED-00445-02, depending on building complexity. All other buildings should use the existing building energy report, form EN-00041-01.

E MINI-AUDIT STATEMENTS

Instructions: This section is to be completed and signed by a registered professional engineer or by a certified mini-auditor who has successfully completed the State of Minnesota's Mini-Audit Procedures Course. This section should be completed after this mini-audit report and an energy report are completed. All blanks must be filled in.

I have reviewed the energy report and/or the energy report results for this building. I found all information contained therein to be correct *OR* I have corrected any misinformation on the energy report which will be resubmitted with this mini-audit report to the Minnesota Energy Agency.

I am not directly responsible for the day to day operations of this building being audited.

I have fully disclosed my financial interests relating to this mini-audit and any energy conservation measures considered by this audit.

I have walked through this building and have found the recommendations listed in section I of this mini-audit report to be the operations and maintenance changes, and low cost energy conservation measures, which would reduce energy consumption in this building.

I have made a rough estimate, in section G, of the range of savings which may result from the implementation of all of the mini-audit opportunities listed in section I. I am not responsible if the actual savings resulting from this mini-audit do not fall within the estimated range.

Based on actual records, the energy conservation operating and maintenance procedures listed in section K ___did not___ (did, did not) save at least 20% of the building's energy consumption as specified in section I.

Based upon my observation of the physical characteristics of this building and the building's major energy using systems, I recommend that this ___should not___ (should, should not) be the subject of a maxi-audit.
I realize that this is not a final judgement, that the State reserves the right to make the maxi-audit funding determination based on this mini-audit report and other criteria.

Based upon the information in section E and the information referred to in section F, I recommend that this building ___should not___ (should, should not) undergo further solar conversion analysis, and/or ___should not___ (should, should not) undergo further analysis of the renewable resources — waste, wind, wood. (Circle proper resources)

In my judgement, as a mini-auditor, all of the above statements are true and correct.

Randy Smith
Mini-Auditor's Name (Print or Type)

Randy Smith 206
Signature

Rieke Carroll Muller Assoc., Inc.
Firm Name (if none, enter none)

P.O. Box 130 Hopkins, MN 55343
Address

(612) 935-6901
Phone

5-17-80
Date

Witnessed by:

Building Organizational Authority (Print or Type)

Signature

Date

F AUDIT TEAM

NAME	POSITION	ORGANIZATION
Randy Smith	Certified Mini-Auditor	Rieke Carroll Muller Assoc., Inc.
Reinert Ege	Maintenance Foreman	City of Bloomington

G BUILDING INFORMATION

BRIEF DESCRIPTION OF GENERAL BUILDING CONDITION (i.e. type, and function)
Good, Offices and storage of fire vehicles

MAJOR CHANGES PLANNED WITHIN NEXT 15 YEARS (i.e. demolition, rehabilitation, conversion from one building type to another)
None

STRUCTURAL COMPONENTS OF ROOF (i.e. metal beams, wooden rafters, concrete)
Metal Trusses

ROOFING MATERIAL (i.e. tar and gravel, shingles, tile)
Tar and Gravel

H SOLAR POTENTIAL INFORMATION

INSTRUCTIONS: Correctly answer the following questions for the building being mini-audited.

Is there open land adjacent to the building?
☐ Yes ☒ No

Solar collectors need to be located in an unshaded area. Is the roof of the building and the south facing wall unshaded between the hours of 9 a.m. and 3 p.m.?
Roof: ☒ Yes ☐ No
South facing Wall: ☒ Yes ☐ No

If the roof or wall are partly shaded, what percentage of the surface is unshaded?
% of roof unshaded _____ %
% of south facing wall unshaded _____ %

What is the overall shape of the building?
☒ square ☐ rectangle ☐ H-shaped ☐ E-shaped ☐ other (specify) _____

Is the roof of the building flat or pitched?
☒ flat ☐ pitched

If pitched, what is the compass orientation of the ridgeline? _____

If pitched, what is the angle that the roof makes with horizontal? _____°

Are there large obstructions on the roof such as chimneys, rooms for mechanical equipment, ventilating units, water towers, etc?
☒ Yes ☐ No

What is the exterior facing material for the south facing wall? Face brick

What percentage of the south facing wall is glass? 5 %

Is the building's space heating equipment located within or on the building? (A no answer indicates the equipment is in a separate building.)
☒ Yes ☐ No

If the space heating equipment is inside the building, where is it located?
☐ Ground Floor ☒ Basement ☒ Roof ☐ Other (specify) _____

Is the building's water heating equipment located within the building? (A no answer indicates the equipment is in a separate building.)
☒ Yes ☐ No

If the water heating equipment is inside the building, where is it located?
☒ Ground Floor ☐ Basement ☐ Other (specify) _____

Is the water heating system a central system, does it consist of multiple units, or is it a combination of the central and multiple units?
☒ Central ☐ Multiple ☐ Combination

I — 20% SAVINGS DATA

Instructions: Enter the total energy used of each fuel type for the base period and the year when there was a 20% or greater energy savings. Indicate the unit of measure. Enter the appropriate conversion factor from Appendix B to convert energy usage into Btu's. Be sure to enter the fiscal years of which the data applies. Refer to pages 7 and 15 for a complete explanation of this section.

BASE PERIOD YEAR — Fiscal Year _____

ENERGY TYPE	ENERGY USAGE	CONVERSION FACTOR	BTU USAGE
Electricity			
Fuel 1			
Fuel 2			
TOTAL			

20% SAVINGS YEAR — Fiscal Year _____

ENERGY TYPE	ENERGY USAGE	CONVERSION FACTOR	BTU USAGE
Electricity			
Fuel 1			
Fuel 2			
TOTAL			

J — SAVINGS ESTIMATION

Instructions: This section is to be completed by the mini-auditor after the walk-thru portion of the mini-audit. First, check the appropriate boxes which state the roughly estimated range of the percent of total electrical and fuel consumption which would be saved resulting from the implementation of all of the new mini-audit opportunities listed in section L. Secondly, calculate the range of energy and cost savings by multiplying the estimated percentages by the annual electrical and fuel consumption data on the energy report.

1

Check two boxes in each category —

Range of Electrical Savings — ☒ 0% ☒ 5% ☐ 10% ☐ 15% ☐ 20% ☐ 25% ☐ other (specify) _____

Range of Fuel Savings — ☐ 0% ☒ 5% ☒ 10% ☐ 15% ☐ 20% ☐ 25% ☐ other (specify) _____

2

Calculate ranges of energy and cost savings —

Range of Electrical Savings

	% Range		Annual Electrical Consumption		Range of Energy Savings		% Range		Annual Electrical Dollars Spent		Range of Electrical Dollars Savings
lower bound	0 %	x	87120 kwh	=	0 kwh,		0 %	x	$ 3187.93	=	$ 0
upper bound	to 5 %	x	87120 kwh	=	to 4356 kwh,		to 5 %	x	$ 3187.93	=	to $ 159.40

3

Range of Fuel Savings

	% Range		Annual Fuel Consumption		Range of Fuel Savings		% Range		Annual Fuel Dollars Spent		Range of Fuel Dollars Savings
lower bound	5 %	x	18.6×10^7 Btu	=	93.0×10^5 Btu,		5 %	x	$ 4158.57	=	$ 207.93
upper bound	to 10 %	x	18.6×10^7 Btu	=	to 18.6×10^6 Btu,		to 10 %	x	$ 4158.57	=	to $ 415.86

The mini-auditor is not responsible if actual savings resulting from the implementation of the energy conservation opportunities listed in section I do not fall between the roughly estimated ranges which are specified.

K

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ITEM NO.	CLASSIFICATION NO.		PAST ENERGY CONSERVATION ACTIONS	ENERGY SAVINGS	ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS		OPTIONAL:	OPTIONAL:	

Note: Reproduce this page as necessary

NEW OPPORTUNITIES

Instructions: Read through the energy conservation recommendation list provided. Then walk through the building with the list. Examine the suggested maintenance and operational changes, and any other low cost energy conservation measures, that pertain to the facility. As you go along, record the item number, the classification number of the recommendation, and the new mini-audit opportunity. The description of the mini-audit opportunity should contain the specific building location where the recommendation applies, if applicable. Any recommendation not found on the list may also be included. For those other recommendations, assign an appropriate classification number from the classification scheme for energy conservation opportunities listed on pages 25 through 37. The date of implementation should only be completed as the recommendation is implemented. *This section of the mini-audit report should be completed by the mini-audit team during the building walk-through.*

ITEM NO.	CLASSIFICATION NO.		NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS OPTIONAL:	ENERGY COST SAVINGS OPTIONAL:	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS				
1	1	1	Keep all controls free of dust.			
2	1	1	Check the amount of insulation in the ceiling.			
3	2	1	Add insulation above suspended ceilings if needed.			
4	2	2	Weatherstrip all exterior doors including garage doors.			
5	2	6	Inspect the roof and seal all cracks that allow outdoor air and water to enter.			
6	2	8	Insulate walls with rigid insulation on inside surfaces.			
7	2	10	Inspect window closing and locking devices to insure a tight window.			
8	2	10	Repair broken or cracked windows. Replace with standard or tempered glass of proper thickness, according to building code requirements.			
9	2	10	Replace single glazed windows with double glazed thermopanes.			
10	2	11	Replace some windows with insulation wall panels.			
11	2	11	Replace some skylights with insulating ceiling or roof materials.			
12	3	1	Check operation of entire heating/cooling control system, including control valves and dampers.			
13	3	1	Check the calibration of all controllers and devices for proper settings and operations.			
14	3	1	When buildings are used after hours for meetings, conferences, cleaning or scattered activities, reduce the number of spaces occupied and, to the extent possible, consolidate them in the same section of the building. Reduce the temperature in all other parts of the building.			
15	3	1	Raise the supply air temperature for cooling to the highest point necessary to provide minimum required cooling.			
16	3	1	Lower the supply air temperature for heating to the lowest point necessary to provide minimum required heating.			

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NEW OPPORTUNITIES

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ITEM NO.	CLASSIFICATION NO. MAJOR CLASS	CLASSIFICATION NO. SUB CLASS	NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS OPTIONAL:	ENERGY COST SAVINGS OPTIONAL:	DATE OF IMPLEMENTATION
17	3	1	Consider regulating the fresh air dampers with enthalpy control so			
			that the building can be cooled with outdoor air when this saves energy.			
18	3	1	65°F maximum occupied, 60°F maximum unoccupied during the heating season.			
19	3	1	78°F minimum when occupied and no cooling when unoccupied during the			
			cooling season.			
20	3	2	Clean and remove obstructions from all room air outlets and inlets			
			(diffusers, registers and grillers). They should be kept clean and free			
			of all dirt and foreign materials.			
21	3	3	Inspect and lubricate bearings of fan motors.			
22	3	3	Inpsect drive belts. Adjust or re-place as necessary to ensure proper			
			operation.			
23	3	3	Inspect fans for normal operation.			
24	3	3	Keep condenser coil face clean to permit proper air flow.			
25	3	3	Inspect ductwork for air leakage. Seal all leaks by taping or caulking.			
26	3	3	Inspect damper blades and linkages. Clean, oil and adjust.			
27	3	3	Take special note of fresh air dampers making sure that they close			
			tightly and be sure to repair, replace or provide blade edge			
			gaskets and gasketing at the end of blades.			
28	3	3	Check belt tension and alignment on the air compressor.			
29	3	3	Inspect air compressor intake filter pads and clean or replace			
			as necessary.			
30	3	3	Check the compressor's oil level.			
31	3	3	Periodically drain the moisture from storage tank.			
32	3	3	Clean evaporator and condenser coils of air conditioning units.			
33	3	3	Keep air intake louvers, filters and controls clear of air cond. units.			

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Note 2: Reproduce this page as necessary.

L NEW OPPORTUNITIES

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ITEM NO.	CLASSIFICATION NO. MAJOR CLASS	CLASSIFICATION NO. SUB CLASS	NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS OPTIONAL:	ENERGY COST SAVINGS OPTIONAL:	DATE OF IMPLEMENTATION
34	3	3	Keep air flow from units unrestricted.			
35	3	3	Caulk openings between unit and window or wall frames.			
36	3	6	Insulate all piping and ductwork.			
37	4	1	Instruct occupants and maintenance personnel to switch off all lights when they are not needed.			
38	4	2	Clean windows and skylights.			
39	4	3	Clean fixtures and lamps regularly.			
40	4	3	Replace lamps in groups before they burn out to maintain higher average light output per fixture.			
41	4	4	Use lower wattage lamps to provide the necessary illumination.			
42	5	1	Keep records of the operating schedule, monthly energy consumption and purchase of any new equipment that affects energy consumption of efficiency of the building. These records will indicate the impact of energy conservation measures.			
43	5	1	Review the record books on a regular basis.			
44	6	2	All insulation applied to a hot water system should be kept in good condition.			
45	6	2	All electric heating equipment should be checked for corroded elements and loose connections and repaired as required.			
46	6	2	Periodically drain and remove the sediment from the water heater.			
47	7	3	Clean air-sides, remove soot, and scrape scale in forced warm-air furnaces.			
48	7	3	If the firing rate of gas or oil burners is too high, it causes short cycling and excessive fuel consumption. Too low a rate requires constant operating and delivers inadequate heat to the spaces.			

Note 1: Date of Implementation should only be completed as the recommendation is implemented. The mini-audit report may be submitted to the Minnesota Energy Agency before the "Date of Implementation" has been completed.

Note 2: Reproduce this page as necessary.

L NEW OPPORTUNITIES

Instructions: Read through the energy conservation recommendation list provided. Then walk through the building with the list. Examine the suggested maintenance and operational changes, and any other low cost energy conservation measures, that pertain to the facility. As you go along, record the item number, the classification number of the recommendation, and the new mini-audit opportunity. The description of the mini-audit opportunity should contain the specific building location where the recommendation applies, if applicable. Any recommendation not found on the list may also be included. For those other recommendations, assign an appropriate classification number from the classification scheme for energy conservation opportunities listed on pages 25 through 37. The date of implementation should only be completed as the recommendation is implemented. *This section of the mini-audit report should be completed by the mini-audit team during the building walk-through.*

ITEM NO.	CLASSIFICATION NO. MAJOR CLASS	CLASSIFICATION NO. SUB CLASS	NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS OPTIONAL:	ENERGY COST SAVINGS OPTIONAL:	DATE OF IMPLEMENTATION
49	7	4	Maintain the lowest possible hot water temperature which will meet domestic hot water needs.			
50	7	4	Clean filters regularly in forced warm air units to reduce the operating time of the furnace.			
51	7	4	Keep all heat exchanger surfaces clean. Check air-to-fuel ratio and adjust as necessary.			
52	7	4	Inspect casing for air leaks and seal as necessary.			
53	7	4	Follow guidelines suggested for fan and motor maintenance.			
54	7	4	Turn off gas pilots for furnaces, boilers, and space heaters, during the non-heating months and during long unoccupied periods.			

Note 1: Date of Implementation should only be completed as the recommendation is implemented. The mini-audit report may be submitted to the Minnesota Energy Agency before the "Date of Implementation" has been completed.

Note 2: Reproduce this page as necessary.

MINI-AUDIT REPORT

FORM NO. MIN-01

A — CONTACT DATA

BUILDING NAME		NAME OF ORGANIZATION		DATE
Fire Station #2		City of Bloomington		5-17-80
BUILDING ADDRESS		**ADDRESS**		
10601 Xerxes Avenue South		2215 West Old Shakopee Road		
CITY	**ZIP CODE**	**CITY**	**ZIP CODE**	
Bloomington, MN	55431	Bloomington, MN	55431	
PERSON COMPLETING FORM	**TELEPHONE**	**CONTACT PERSON**	**TELEPHONE**	
Randy Smith	(612) 935-6901	Arthur Jensen	(612) 881-5811	

B — BUILDING ELIGIBILITY CODE

Instructions: For blocks 1 and 2 check the box which best fits the building ownership conditions. For block 3 determine which of the four categories describes the building type and then within the category check off the sub category befitting the building function.

1. OWNERSHIP TYPE
   - [X] Public (PUB)
   - [ ] Non-Profit Association (NAP)

2. ULTIMATE OWNER
   - [ ] County (CNTY)
   - [X] City (CITY)
   - [ ] Township (TOWN)
   - [ ] State (STAT)
   - [ ] Public School (PUSC)
   - [ ] Private School (PRSC)
   - [ ] Non-Profit Association (NPAP)
   - [ ] Indian Tribe (INDN)

3a. SCHOOLS
   - [ ] Elementary (SCHL-ELM)
   - [ ] Secondary (SCHL-SECD)
   - [ ] Coll. or Univ. (SCHL-POST)
   - [ ] Vocational (SCHL-VOCL)
   - [ ] Education Agency (SCHL-ADMN)
   - [ ] Administration (SCHL-ADMN)
   - [ ] OTHER (SCHL-OTHR)

b. PUBLIC CARE
   - [ ] Nursing Home (PBCR-NURS)
   - [ ] Long Term Care (PBCR-TERM)
   - [ ] Rehab. Facility (PBCR-RHAB)
   - [ ] Public Health Ctr. (PBCR-HCTR)
   - [ ] Res. Child Care Ctr. (PBCR-RCCC)

c. LOCAL GOVERNMENT
   - [ ] Office (LOCG-OFFC)
   - [ ] Storage (LOCG-STRG)
   - [ ] Service (LOCG-SERV)
   - [ ] Library (LOCG-LBRY)
   - [ ] Police (LOCG-PLCE)
   - [X] Fire (LOCG-FIRE)
   - [ ] OTHER (LOCG-OTHR)

d. HOSPITALS
   - [ ] General (HOSP-GENL)
   - [ ] Tuberculosis (HOSP-TUBR)
   - [ ] OTHER (HOSP-OTHR)

C — MINI-AUDIT FUNDING REQUEST

Instructions: With reference to page 23 entitled Funding Information, determine if the facilities are eligible for both Federal and State funding or just Federal funding. then answer the questions correctly for the situation. This section must be signed and dated by the head of the organization.

If eligible for both Federal and State Funding:
Have you received a mini-audit grant before? [Yes [X] No
Have you previously applied for mini-audit funding? [X] Yes [ ] No
Do you wish to apply for mini-audit funding? [ ] Yes [X] No

Date: _____

Name: _____

Signature: _____

If eligible for Federal funding only:
Have you received a mini-audit grant before? [ ] Yes [ ] No
Have you previously applied for mini-audit funding? [ ] Yes [ ] No
Do you wish to apply for mini-audit funding? [ ] Yes [ ] No
The 50% match for Federal funds will come from: (Use additional sheets if necessary.)

Date: _____

Name: _____

Signature: _____

D ENERGY REPORT CHECK-OFF

Check the type of energy report which was completed and submitted prior to this mini-audit report.

- ☐ Elementary School Energy Report (Form No. ED-00444-02)
- ☐ Secondary School Energy Report (Form No. ED-00445-02)
- XX ☑ Existing Building Energy Report (Form No. EN-00041-01)

If an energy report has not been completed previous to this mini-audit report, one must be included with this report. Elementary, secondary, and vocational schools should use form ED-00444-02 or form ED-00445-02, depending on building complexity. All other buildings should use the existing building energy report, form EN-00041-01.

E MINI-AUDIT STATEMENTS

Instructions: This section is to be completed and signed by a registered professional engineer or by a certified mini-auditor who has successfully completed the State of Minnesota's Mini-Audit Procedures Course. This section should be completed after this mini-audit report and an energy report are completed. All blanks must be filled in.

I have reviewed the energy report and/or the energy report results for this building. I found all information contained therein to be correct *OR* I have corrected any misinformation on the energy report which will be resubmitted with this mini-audit report to the Minnesota Energy Agency.

I am not directly responsible for the day to day operations of this building being audited.

I have fully disclosed my financial interests relating to this mini-audit and any energy conservation measures considered by this audit.

I have walked through this building and have found the recommendations listed in section I of this mini-audit report to be the operations and maintenance changes, and low cost energy conservation measures, which would reduce energy consumption in this building.

I have made a rough estimate, in section G, of the range of savings which may result from the implementation of all of the mini-audit opportunities listed in section I. I am not responsible if the actual savings resulting from this mini-audit do not fall within the estimated range.

Based on actual records, the energy conservation operating and maintenance procedures listed in section K did not (did, did not) save at least 20% of the building's energy consumption as specified in section I.

Based upon my observation of the physical characteristics of this building and the building's major energy using systems, I recommend that this should not (should, should not) be the subject of a maxi-audit.
I realize that this is not a final judgement, that the State reserves the right to make the maxi-audit funding determination based on this mini-audit report and other criteria.

Based upon the information in section E and the information referred to in section F, I recommend that this building should not (should, should not) undergo further solar conversion analysis, and/or should not (should, should not) undergo further analysis of the renewable resources — waste, wind, wood. (Circle proper resources)

In my judgement, as a mini-auditor, all of the above statements are true and correct.

Randy Smith
Mini-Auditor's Name (Print or Type)

Randy Smith 206
Signature

Rieke Carroll Muller Assoc., Inc.
Firm Name (if none, enter none)

P.O. Box 130 Hopkins, MN 55343
Address

(612) 935-6901
Phone

5-17-80
Date

Witnessed by:

Building Organizational Authority (Print or Type)

Signature

Date

F AUDIT TEAM

NAME	POSITION	ORGANIZATION
Randy Smith	Certified Mini-Auditor	Rieke Carroll Muller Assoc., Inc.
Rienert Ege	Maintenance Engineer	City of Bloomington

G BUILDING INFORMATION

BRIEF DESCRIPTION OF GENERAL BUILDING CONDITION (i.e. type, and function)
Good, Offices and Storage of fire vehicles

MAJOR CHANGES PLANNED WITHIN NEXT 15 YEARS (i.e. demolition, rehabilitation, conversion from one building type to another)
None

STRUCTURAL COMPONENTS OF ROOF (i.e. metal beams, wooden rafters, concrete)
Concrete Plank

ROOFING MATERIAL (i.e. tar and gravel, shingles, tile)
Tar and Gravel

H SOLAR POTENTIAL INFORMATION

INSTRUCTIONS: Correctly answer the following questions for the building being mini-audited.

Is there open land adjacent to the building?
☐ Yes ☒ No

Solar collectors need to be located in an unshaded area. Is the roof of the building and the south facing wall unshaded between the hours of 9 a.m. and 3 p.m.?
Roof: ☒ Yes ☐ No
South facing Wall: ☒ Yes ☐ No

If the roof or wall are partly shaded, what percentage of the surface is unshaded?
% of roof unshaded _____ %
% of south facing wall unshaded _____ %

What is the overall shape of the building?
☒ square ☐ rectangle ☐ H-shaped ☐ E-shaped ☐ other (specify) _____

Is the roof of the building flat or pitched?
☒ flat ☐ pitched

If pitched, what is the compass orientation of the ridgeline? _____

If pitched, what is the angle that the roof makes with horizontal? _____°

Are there large obstructions on the roof such as chimneys, rooms for mechanical equipment, ventilating units, water towers, etc?
☐ Yes ☒ No

What is the exterior facing material for the south facing wall? Face brick and wood

What percentage of the south facing wall is glass? 0 %

Is the building's space heating equipment located within or on the building? (A no answer indicates the equipment is in a separate building.)
☒ Yes ☐ No

If the space heating equipment is inside the building, where is it located?
☒ Ground Floor ☐ Basement ☐ Roof ☐ Other (specify) _____

Is the building's water heating equipment located within the building? (A no answer indicates the equipment is in a separate building.)
☒ Yes ☐ No

If the water heating equipment is inside the building, where is it located?
☒ Ground Floor ☐ Basement ☐ Other (specify) _____

Is the water heating system a central system, does it consist of multiple units, or is it a combination of the central and multiple units?
☒ Central ☐ Multiple ☐ Combination

I — 20% SAVINGS DATA

Instructions: Enter the total energy used of each fuel type for the base period and the year when there was a 20% or greater energy savings. Indicate the unit of measure. Enter the appropriate conversion factor from Appendix B to convert energy usage into Btu's. Be sure to enter the fiscal years of which the data applies. Refer to pages 7 and 15 for a complete explanation of this section.

BASE PERIOD YEAR Fiscal Year _____

ENERGY TYPE	ENERGY USAGE	CONVERSION FACTOR	BTU USAGE
Electricity			
Fuel 1			
Fuel 2			
TOTAL			

20% SAVINGS YEAR Fiscal Year _____

ENERGY TYPE	ENERGY USAGE	CONVERSION FACTOR	BTU USAGE
Electricity			
Fuel 1			
Fuel 2			
TOTAL			

J — SAVINGS ESTIMATION

Instructions: This section is to be completed by the mini-auditor after the walk-thru portion of the mini-audit. First, check the appropriate boxes which state the roughly estimated range of the percent of total electrical and fuel consumption which would be saved resulting from the implementation of all of the new mini-audit opportunities listed in section L. Secondly, calculate the range of energy and cost savings by multiplying the estimated percentages by the annual electrical and fuel consumption data on the energy report.

1 Check two boxes in each category —

Range of Electrical Savings — ☒ 0% ☒ 5% ☐ 10% ☐ 15% ☐ 20% ☐ 25% ☐ other (specify) _____

Range of Fuel Savings — ☐ 0% ☒ 5% ☒ 10% ☐ 15% ☐ 20% ☐ 25% ☐ other (specify) _____

2 Calculate ranges of energy and cost savings —

Range of Electrical Savings

	% Range		Annual Electrical Consumption		Range of Energy Savings		% Range		Annual Electrical Dollars Spent		Range of Electrical Dollars Savings
lower bound	0 %	x	36297 kwh	=	0 kwh,		0 %	x	$ 1462.61	=	$ 0
	to				to		to				to
upper bound	5 %	x	36297 kwh	=	1814.9 kwh,		5 %	x	$ 1462.61	=	$ 73.13

3 **Range of Fuel Savings**

	% Range		Annual Fuel Consumption		Range of Fuel Savings		% Range		Annual Fuel Dollars Spent		Range of Fuel Dollars Savings
lower bound	5 %	x	68.0×10^6 Btu	=	34.0×10^5 Btu,		5 %	x	$ 1539.03	=	$ 76.95
	to				to		to				to
upper bound	10 %	x	68.0×10^6 Btu	=	68.0×10^5 Btu,		10 %	x	$ 1539.03	=	$ 153.90

The mini-auditor is not responsible if actual savings resulting from the implementation of the energy conservation opportunities listed in section I do not fall between the roughly estimated ranges which are specified.

K

Instructions: Read through the list of energy conservation opportunities provided. As you read through the items, list below those items which have already been undertaken in your facility. The description of the past energy conservation action should contain the specific building location where the recommendation applies, if applicable. Indicate the date of implementation of each item and its classification number. Energy conserving items which have been undertaken and are not on the list provided should also be included along with their appropriate classification numbers. The classification number should be taken from the classification scheme for energy conservation opportunities listed on pages 25 through 37. *This section of the mini-audit report should be completed by building personnel prior to the walk-through by the mini-auditor.*

ITEM NO.	CLASSIFICATION NO.		PAST ENERGY CONSERVATION ACTIONS	OPTIONAL: ENERGY SAVINGS	OPTIONAL: ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS				

Note: Reproduce this page as necessary

F NEW OPPORTUNITIES

Instructions: Read through the energy conservation recommendation list provided. Then walk through the building with the list. Examine the suggested maintenance and operational changes, and any other low cost energy conservation measures, that pertain to the facility. As you go along, record the item number, the classification number of the recommendation, and the new mini-audit opportunity. The description of the mini-audit opportunity should contain the specific building location where the recommendation applies, if applicable. Any recommendation not found on the list may also be included. For those other recommendations, assign an appropriate classification number from the classification scheme for energy conservation opportunities listed on pages 25 through 37. The date of implementation should only be completed as the recommendation is implemented. *This section of the mini-audit report should be completed by the mini-audit team during the building walk-through.*

ITEM NO.	CLASSIFICATION NO. MAJOR CLASS	CLASSIFICATION NO. SUB CLASS	NEW MINI-AUDIT OPPORTUNITIES	OPTIONAL: ENERGY SAVINGS	OPTIONAL: ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
1	1	1	Keep all controls free of dust.			
2	2	2	Weatherstrip all exterior doors including garage doors.			
3	2	6	Inpsect the roof and seal all cracks that allow outdoor air and water to enter.			
4	2	6	Caulk the insulation on the roof.			
5	2	6	Insulate the roof areas if needed.			
6	2	8	Insulate walls with rigid insulation on inside surfaces, or place loose fill insulation in wall cavaties.			
7	2	10	Replace single glazed windows with double glazed thermopanes.			
8	3	1	Check operation of entire heating/cooling control system, including control valves and dampers.			
9	3	1	Check the calibration of all controllers and devices for proper settings and operations.			
10	3	1	Raise the supply air temperature for cooling to the highest point necessary to provide minimum required cooling.			
11	3	1	Lower the supply air temperature for heating to the lowest point necessary to provide minimum required heating.			
12	3	1	65°F maximum occupied, 60°F maximum unoccupied during the heating season.			
13	3	1	78°F minimum when occupied and no cooling when unoccupied during the cooling season.			
14	3	3	Keep fan blades clear.			
15	3	3	Inspect and lubricate bearings of fan motors.			
16	3	3	Inspect drive belts. Adjust or replace as necessary to ensure proper operation.			
17	3	3	Inspect fans for normal operation.			

Note 1: Date of Implementation should only be completed as the recommendation is implemented. The mini-audit report may be submitted to the Minnesota Energy Agency before the "Date of Implementation" has been completed.

Note 2: Reproduce this page as necessary.

F NEW OPPORTUNITIES

Instructions: Read through the energy conservation recommendation list provided. Then walk through the building with the list. Examine the suggested maintenance and operational changes, and any other low cost energy conservation measures, that pertain to the facility. As you go along, record the item number, the classification number of the recommendation, and the new mini-audit opportunity. The description of the mini-audit opportunity should contain the specific building location where the recommendation applies, if applicable. Any recommendation not found on the list may also be included. For those other recommendations, assign an appropriate classification number from the classification scheme for energy conservation opportunities listed on pages 25 through 37. The date of implementation should only be completed as the recommendation is implemented. *This section of the mini-audit report should be completed by the mini-audit team during the building walk-through.*

ITEM NO.	CLASSIFICATION NO. MAJOR CLASS	CLASSIFICATION NO. SUB CLASS	NEW MINI-AUDIT OPPORTUNITIES	OPTIONAL: ENERGY SAVINGS	OPTIONAL: ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
18	3	3	Keep condenser coil face clean to permit proper air flow.			
19	3	3	Inspect damper blades and linkages. Clean, oil and adjust.			
20	3	3	Take special note of fresh air dampers making sure that they close tightly and be sure to repair, replace or provide blade edge gaskets and gasketing at the end of blades.			
21	4	1	Instruct occupants and maintenance personnel to switch off all lights when they are not needed.			
22	4	2	Clean windows and skylights.			
23	4	3	Clean fixtures and lamps regularly.			
24	4	4	Use lower wattage lamps to provide the necessary illumination.			
25	4	4	Allow part of a lighting system to be turned off, while maintaining the necessary light.			
26	5	1	Keep records of the operating schedule, monthly energy consumption and purchase of any new equipment that affects energy consumption of efficiency of the building. These records will indicate the impact of energy conservation measures.			
27	6	2	All insulation applied to a hot water system should be kept in good condition.			
28	6	2	The burner system of fossil-fuel water heaters should be kept clean and in good operating condition.			
29	6	2	All electric heating equipment should be checked for corroded elements and loose connections and repaired as required.			
30	6	2	Periodically drain and remove the sediment from the water heater.			
31	7	3	Clean air-sides, remove soot, and scrape scale in forced warm air furnaces.			

Note 1: Date of Implementation should only be completed as the recommendation is implemented. The mini-audit report may be submitted to the Minnesota Energy Agency before the "Date of Implementation" has been completed.

Note 2: Reproduce this page as necessary.

NEW OPPORTUNITIES

Instructions: Read through the energy conservation recommendation list provided. Then walk through the building with the list. Examine the suggested maintenance and operational changes, and any other low cost energy conservation measures, that pertain to the facility. As you go along, record the item number, the classification number of the recommendation, and the new mini-audit opportunity. The description of the mini-audit opportunity should contain the specific building location where the recommendation applies, if applicable. Any recommendation not found on the list may also be included. For those other recommendations, assign an appropriate classification number from the classification scheme for energy conservation opportunities listed on pages 25 through 37. The date of implementation should only be completed as the recommendation is implemented. *This section of the mini-audit report should be completed by the mini-audit team during the building walk-through.*

ITEM NO.	CLASSIFICATION NO. MAJOR CLASS	CLASSIFICATION NO. SUB CLASS	NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS OPTIONAL:	ENERGY COST SAVINGS OPTIONAL:	DATE OF IMPLEMENTATION
32	7	3	If the firing rate of gas or oil burners is too hig, it causes short cycling and excessive fuel consumption. Too low a rate requires constant operating and delivers inadequate heat to the spaces.			
33	7	4	Maintain the lowest possible hot water temperature which will meet domestic hot water needs.			
34	7	4	Clean filters regularly in forced warm air units to reduce the operating time of the furnace.			
35	7	4	Turn off gas pilots for furnaces, boilers, and space heaters during non-heating months and during long unoccupied periods.			
36	7	4	Keep all heat exchanger surfaces clean. Check air-to-fule ratio and adjust as necessary.			
37	7	4	Inspect casing for air leaks and seal as necessary.			
38	7	4	Follow guidelines suggested for fan and motor maintenance of unit heaters.			

Note 1: Date of Implementation should only be completed as the recommendation is implemented. The mini-audit report may be submitted to the Minnesota Energy Agency before the "Date of Implementation" has been completed.

Note 2: Reproduce this page as necessary.

MINI-AUDIT REPORT

FORM NO. MIN-01

A — CONTACT DATA

BUILDING NAME		NAME OF ORGANIZATION		DATE
Fire Station #3		City of Bloomington		5-17-80
BUILDING ADDRESS		**ADDRESS**		
2050 East 86th Street		2215 West Old Shakopee Road		
CITY	**ZIP CODE**	**CITY**	**ZIP CODE**	
Bloomington, MN	55420	Bloomington, MN	55431	
PERSON COMPLETING FORM	**TELEPHONE**	**CONTACT PERSON**	**TELEPHONE**	
Randy Smith	(612) 935-6901	Arthur Jensen	(612) 881-5811	

B — BUILDING ELIGIBILITY CODE

Instructions: For blocks 1 and 2 check the box which best fits the building ownership conditions. For block 3 determine which of the four categories describes the building type and then within the category check off the sub category befitting the building function.

1. OWNERSHIP TYPE
   - [X] Public (PUB)
   - [ ] Non-Profit Association (NAP)

2. ULTIMATE OWNER
   - [ ] County (CNTY)
   - [X] City (CITY)
   - [ ] Township (TOWN)
   - [ ] State (STAT)
   - [ ] Public School (PUSC)
   - [ ] Private School (PRSC)
   - [ ] Non-Profit Association (NPAP)
   - [ ] Indian Tribe (INDN)

3a. SCHOOLS
   - [ ] Elementary (SCHL-ELM)
   - [ ] Secondary (SCHL-SECD)
   - [ ] Coll. or Univ. (SCHL-POST)
   - [ ] Vocational (SCHL-VOCL)
   - [ ] Education Agency (SCHL-ADMN)
   - [ ] Administration (SCHL-ADMN)
   - [ ] OTHER (SCHL-OTHR)

b. PUBLIC CARE
   - [ ] Nursing Home (PBCR-NURS)
   - [ ] Long Term Care (PBCR-TERM)
   - [ ] Rehab. Facility (PBCR-RHAB)
   - [ ] Public Health Ctr. (PBCR-HCTR)
   - [ ] Res. Child Care Ctr. (PBCR-RCCC)

c. LOCAL GOVERNMENT
   - [ ] Office (LOCG-OFFC)
   - [ ] Storage (LOCG-STRG)
   - [ ] Service (LOCG-SERV)
   - [ ] Library (LOCG-LBRY)
   - [ ] Police (LOCG-PLCE)
   - [X] Fire (LOCG-FIRE)
   - [ ] OTHER (LOCG-OTHR)

d. HOSPITALS
   - [ ] General (HOSP-GENL)
   - [ ] Tuberculosis (HOSP-TUBR)
   - [ ] OTHER (HOSP-OTHR)

C — MINI-AUDIT FUNDING REQUEST

Instructions: With reference to page 23 entitled Funding Information, determine if the facilities are eligible for both Federal and State funding or just Federal funding. then answer the questions correctly for the situation. This section must be signed and dated by the head of the organization.

If eligible for both Federal and State Funding:
Have you received a mini-audit grant before? [ ] Yes [X] No
Have you previously applied for mini-audit funding? [ ] Yes [X] No
Do you wish to apply for mini-audit funding? [ ] Yes [X] No

Date: _____

Name: _____

Signature: _____

If eligible for Federal funding only:
Have you received a mini-audit grant before? [ ] Yes [ ] No
Have you previously applied for mini-audit funding? [ ] Yes [ ] No
Do you wish to apply for mini-audit funding? [ ] Yes [ ] No
The 50% match for Federal funds will come from: (Use additional sheets if necessary.)

Date _____

Name: _____

Signature: _____

D ENERGY REPORT CHECK-OFF

Check the type of energy report which was completed and submitted prior to this mini-audit report.

- ☐ Elementary School Energy Report (Form No. ED-00444-02)
- ☐ Secondary School Energy Report (Form No. ED-00445-02)
- ☒ Existing Building Energy Report (Form No. EN-00041-01)

If an energy report has not been completed previous to this mini-audit report, one must be included with this report. Elementary, secondary, and vocational schools should use form ED-00444-02 or form ED-00445-02, depending on building complexity. All other buildings should use the existing building energy report, form EN-00041-01.

E MINI-AUDIT STATEMENTS

Instructions: This section is to be completed and signed by a registered professional engineer or by a certified mini-auditor who has successfully completed the State of Minnesota's Mini-Audit Procedures Course. This section should be completed after this mini-audit report and an energy report are completed. All blanks must be filled in.

I have reviewed the energy report and/or the energy report results for this building. I found all information contained therein to be correct *OR* I have corrected any misinformation on the energy report which will be resubmitted with this mini-audit report to the Minnesota Energy Agency.

I am not directly responsible for the day to day operations of this building being audited.

I have fully disclosed my financial interests relating to this mini-audit and any energy conservation measures considered by this audit.

I have walked through this building and have found the recommendations listed in section I of this mini-audit report to be the operations and maintenance changes, and low cost energy conservation measures, which would reduce energy consumption in this building.

I have made a rough estimate, in section G, of the range of savings which may result from the implementation of all of the mini-audit opportunities listed in section I. I am not responsible if the actual savings resulting from this mini-audit do not fall within the estimated range.

Based on actual records, the energy conservation operating and maintenance procedures listed in section K ___did not___ (did, did not) save at least 20% of the building's energy consumption as specified in section I.

Based upon my observation of the physical characteristics of this building and the building's major energy using systems, I recommend that this ___should not___ (should, should not) be the subject of a maxi-audit.
I realize that this is not a final judgement, that the State reserves the right to make the maxi-audit funding determination based on this mini-audit report and other criteria.

Based upon the information in section E and the information referred to in section F, I recommend that this building ___should not___ (should, should not) undergo further solar conversion analysis, and/or ___should not___ (should, should not) undergo further analysis of the renewable resources — waste, wind, wood. (Circle proper resources)

In my judgement, as a mini-auditor, all of the above statements are true and correct.

Randy Smith
Mini-Auditor's Name (Print or Type)

Randy Smith 206
Signature

Rieke Carroll Muller Assoc., Inc.
Firm Name (if none, enter none)

PO Box 130 Hopkins, MN 55343
Address

(612) 935-6901
Phone

5-17-80
Date

Witnessed by:

Building Organizational Authority (Print or Type)

Signature

Date

F AUDIT TEAM

NAME	POSITION	ORGANIZATION
Randy Smith	Certified Mini Auditor	Rieke Carroll Muller Assoc., Inc.
Reinert Ege	Maintenance Foreman	City of Bloomington

G BUILDING INFORMATION

BRIEF DESCRIPTION OF GENERAL BUILDING CONDITION (i.e. type, and function)
Good, Offices and Storage of Fire Vehicles

MAJOR CHANGES PLANNED WITHIN NEXT 15 YEARS (i.e. demolition, rehabilitation, conversion from one building type to another)
None

STRUCTURAL COMPONENTS OF ROOF (i.e. metal beams, wooden rafters, concrete)
Concrete

ROOFING MATERIAL (i.e. tar and gravel, shingles, tile)
Tar and Gravel

H SOLAR POTENTIAL INFORMATION

INSTRUCTIONS: Correctly answer the following questions for the building being mini-audited.

Is there open land adjacent to the building?
☐ Yes ☒ No

Solar collectors need to be located in an unshaded area. Is the roof of the building and the south facing wall unshaded between the hours of 9 a.m. and 3 p.m.?
Roof: ☒ Yes ☐ No
South facing Wall: ☒ Yes ☐ No

If the roof or wall are partly shaded, what percentage of the surface is unshaded?
% of roof unshaded _____ %
% of south facing wall unshaded _____ %

What is the overall shape of the building?
☐ square ☒ rectangle ☐ H-shaped ☐ E-shaped ☐ other (specify) _____

Is the roof of the building flat or pitched?
☒ flat ☐ pitched

If pitched, what is the compass orientation of the ridgeline? _____

If pitched, what is the angle that the roof makes with horizontal? _____°

Are there large obstructions on the roof such as chimneys, rooms for mechanical equipment, ventilating units, water towers, etc?
☐ Yes ☒ No

What is the exterior facing material for the south facing wall? Face brick

What percentage of the south facing wall is glass? 5 %

Is the building's space heating equipment located within or on the building? (A no answer indicates the equipment is in a separate building.)
☒ Yes ☐ No

If the space heating equipment is inside the building, where is it located?
☒ Ground Floor ☐ Basement ☐ Roof ☐ Other (specify) _____

Is the building's water heating equipment located within the building? (A no answer indicates the equipment is in a separate building.)
☒ Yes ☐ No

If the water heating equipment is inside the building, where is it located?
☒ Ground Floor ☐ Basement ☐ Other (specify) _____

Is the water heating system a central system, does it consist of multiple units, or is it a combination of the central and multiple units?
☒ Central ☐ Multiple ☐ Combination

I — 20% SAVINGS DATA

Instructions: Enter the total energy used of each fuel type for the base period and the year when there was a 20% or greater energy savings. Indicate the unit of measure. Enter the appropriate conversion factor from Appendix B to convert energy usage into Btu's. Be sure to enter the fiscal years of which the data applies. Refer to pages 7 and 15 for a complete explanation of this section.

BASE PERIOD YEAR — Fiscal Year _____

ENERGY TYPE	ENERGY USAGE	CONVERSION FACTOR	BTU USAGE
Electricity			
Fuel 1			
Fuel 2			
TOTAL			

20% SAVINGS YEAR — Fiscal Year _____

ENERGY TYPE	ENERGY USAGE	CONVERSION FACTOR	BTU USAGE
Electricity			
Fuel 1			
Fuel 2			
TOTAL			

J — SAVINGS ESTIMATION

Instructions: This section is to be completed by the mini-auditor after the walk-thru portion of the mini-audit. First, check the appropriate boxes which state the roughly estimated range of the percent of total electrical and fuel consumption which would be saved resulting from the implementation of all of the new mini-audit opportunities listed in section L. Secondly, calculate the range of energy and cost savings by multiplying the estimated percentages by the annual electrical and fuel consumption data on the energy report.

1

Check two boxes in each category —

Range of Electrical Savings — ☒ 0% ☒ 5% ☐ 10% ☐ 15% ☐ 20% ☐ 25% ☐ other (specify) _____

Range of Fuel Savings — ☐ 0% ☒ 5% ☒ 10% ☐ 15% ☐ 20% ☐ 25% ☐ other (specify) _____

2

Calculate ranges of energy and cost savings —

Range of Electrical Savings

	% Range		Annual Electrical Consumption		Range of Energy Savings	% Range		Annual Electrical Dollars Spent		Range of Electrical Dollars Savings
lower bound	0 %	x	61874 kwh	=	0 kwh,	0 %	x	$ 2423.84	=	$ 0
to upper bound	5 %	x	61874 kwh	=	3093.7 kwh,	5 %	x	$ 2423.84	=	$ 121.19

3

Range of Fuel Savings

	% Range		Annual Fuel Consumption		Range of Fuel Savings	% Range		Annual Fuel Dollars Spent		Range of Fuel Dollars Savings
lower bound	5 %	x	77.8×10^6 Btu	=	38.9×10^5 Btu,	5 %	x	$ 1763.68	=	$ 88.18
to upper bound	10 %	x	77.8×10^6 Btu	=	77.8×10^5 Btu,	10 %	x	$ 1763.38	=	$ 176.34

The mini-auditor is not responsible if actual savings resulting from the implementation of the energy conservation opportunities listed in section I do not fall between the roughly estimated ranges which are specified.

K

Instructions: Read through the list of energy conservation opportunities provided. As you read through the items, list below those items which have already been undertaken in your facility. The description of the past energy conservation action should contain the specific building location where the recommendation applies, if applicable. Indicate the date of implementation of each item and its classification number. Energy conserving items which have been undertaken and are not on the list provided should also be included along with their appropriate classification numbers. The classification number should be taken from the classification scheme for energy conservation opportunities listed on pages 25 through 37. *This section of the mini-audit report should be completed by building personnel prior to the walk-through by the mini-auditor.*

ITEM NO.	CLASSIFICATION NO.		PAST ENERGY CONSERVATION ACTIONS	OPTIONAL: ENERGY SAVINGS	OPTIONAL: ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS				

Note: Reproduce this page as necessary

NEW OPPORTUNITIES

Instructions: Read through the energy conservation recommendation list provided. Then walk through the building with the list. Examine the suggested maintenance and operational changes, and any other low cost energy conservation measures, that pertain to the facility. As you go along, record the item number, the classification number of the recommendation, and the new mini-audit opportunity. The description of the mini-audit opportunity should contain the specific building location where the recommendation applies, if applicable. Any recommendation not found on the list may also be included. For those other recommendations, assign an appropriate classification number from the classification scheme for energy conservation opportunities listed on pages 25 through 37. The date of implementation should only be completed as the recommendation is implemented. *This section of the mini-audit report should be completed by the mini-audit team during the building walk-through.*

ITEM NO.	CLASSIFICATION NO.		NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS OPTIONAL:	ENERGY COST SAVINGS OPTIONAL:	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS				
1	1	1	Keep all controls free of dust.			
2	2	2	Weatherstrip all exterior doors.			
3	2	2	Replace an existing door with one of a higher R-value.			
4	2	6	Inspect the roof and seal all cracks that allow outdoor air and water to enter.			
5	2	6	Check the insulation on the roof.			
6	2	6	Insulate the roof areas if needed.			
7	2	8	Insulate walls with rigid insulation on inside surfaces, or place loose fill insulation in wall cavaties.			
8	2	10	Replace single glazed windows with double glazed thermopanes.			
9	3	1	Check operation of entire heating/ cooling control system, including control valves and dampers.			
10	3	1	Check the calibration of all controllers and devices for proper settings and operations.			
11	3	1	Raise the supply air temperature for cooling to the highest point necessary to provide minimum required cooling.			
12	3	1	Lower the supply air temperature for heating to the lowest point necessary to provide minimum required heating.			
13	3	1	65°F maximum occupied, 60°F maximum unoccupied during the heating season.			
14	3	1	78°F minimum when occupied and no cooling when unoccupied during the cooling season.			
15	3	2	Clean and remove obstructions from all room air outlets and inlets (diffusers, registers and grillers). They should be kept clean and free of all dirt and foreign materials.			
16	3	3	Inspect and lubricate bearings of fan motors.			

Note 1: Date of Implementation should only be completed as the recommendation is implemented. The mini-audit report may be submitted to the Minnesota Energy Agency before the "Date of Implementation" has been completed.

Note 2 Reproduce this page as necessary.

NEW OPPORTUNITIES

Instructions: Read through the energy conservation recommendation list provided. Then walk through the building with the list. Examine suggested maintenance and operational changes, and any other low cost energy conservation measures, that pertain to the facility. As you go along record the item number, the classification number of the recommendation, and the new mini-audit opportunity. The description of the mini-audit opportunity should contain the specific building location where the recommendation applies, if applicable. Any recommendation not found on the list may also be included. For those other recommendations, assign an appropriate classification number from the classification scheme for energy conservation opportunities listed on pages 25 through 37. The date of implementation should only be completed as the recommendation is implemented. *This section of the mini-audit report should be completed by the mini-audit team during the building walk-through.*

ITEM NO	CLASSIFICATION NO		NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS OPTIONAL:	ENERGY COST SAVINGS OPTIONAL:	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS				
17	3	3	Inspect drive belts. Adjust or replace as necessary to ensure proper operation.			
18	3	3	Inspect fans for normal operation.			
19	3	3	Make sure that all fans frequently inoperative in unit heaters, fan coil units, and unit ventilators are running normally to increase the heat transfer rate from heating coils.			
20	3	3	Keep condenser coil face clean to permit proper air flow.			
21	3	3	Inspect damper blades and linages. Clean, oil and adjust.			
22	3	3	Take special note of fresh air dampers making sure that they close tightly and be sure to repair, replace or provide blade edge gaskets and gasketing at the end of blades.			
23	3	3	Clean evaporator and condenser coils of the air conditioning units.			
24	3	3	Caulk openings between unit and window or wall frames.			
25	4	1	Instruct occupants and maintenance personnel to switch off all lights when they are not needed.			
26	4	3	Clean fixtures and lamps regularly.			
27	4	4	Use lower wattage lamps to provide the necessary illumination.			
28	4	4	Allow part of a lighting system to be turned off, while maintaining the necessary light.			
29	5	1	Keep records of the operating schedule, monthly energy consumption and purchase of any new equipment that affects energy consumption of efficiency of the building. These records will indicate the impact of energy conservation measures.			
30	5	1	Review the record books on a regular basis.			

Note 1 Date of Implementation should only be completed as the recommendation is implemented. The mini-audit report may be submitted to the Minnesota Energy Agency before the "Date of Implementation" has been completed.

Note 2 Reproduce this page as necessary.

NEW OPPORTUNITIES

Instructions: Read through the energy conservation recommendation list provided. Then walk through the building with the list. Examine suggested maintenance and operational changes, and any other low cost energy conservation measures, that pertain to the facility. As you go along, record the item number, the classification number of the recommendation, and the new mini-audit opportunity. The description of the mini-audit opportunity should contain the specific building location where the recommendation applies, if applicable. Any recommendation not found on the list may also be included. For those other recommendations, assign an appropriate classification number from the classification scheme for energy conservation opportunities listed on pages 25 through 37. The date of implementation should only be completed as the recommendation is implemented. *This section of the mini-audit report should be completed by the mini-audit team during the building walk-through.*

ITEM NO	CLASSIFICATION NO		NEW MINI-AUDIT OPPORTUNITIES	OPTIONAL: ENERGY SAVINGS	OPTIONAL: ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS				
31	6	2	The burner system of fossil-fuel water heaters should be kept clean and in good operating condition.			
32	6	2	All electric heating equipment should be checked for corroded elements and loose connections and repaired as required.			
33	6	2	Clean air-sides, remove soot, and scrape scale in forced warm air furnaces.			
34	7	3	If the firing rate of gas or oil burners is too high, it causes short cycling and excessive fuel consumption. Too low a rate requires constant operating and deliver inadequate heat to the spaces.			
35	7	4	Maintain the lowest possible hot water temperature which will meet domestic hot water needs.			
36	7	4	Clean filters regularly in forced warm air units to reduce the operating time of the furnace.			
37	7	4	Turn off gas pilots for furnaces, boilers, and space heaters during the non-heating months and during long unoccupied periods.			
38	7	4	Keep all heat exchanger surfaces clean. Check air-to-fuel ratio and adjust as necessary.			
39	7	4	Inspect casing for air leaks and seal as necessary.			
40	7	4	Follow guidelines suggested for fan and motor maintenance.			

Note 1 Date of Implementation should only be completed as the recommendation is implemented. The mini-audit report may be submitted to the Minnesota Energy Agency before the "Date of Implementation" has been completed.

Note 2 Reproduce this page as necessary.

MINI-AUDIT REPORT

FORM NO. MIN-01

A — CONTACT DATA

BUILDING NAME		NAME OF ORGANIZATION	DATE
Fire Station #4		City of Bloomington	5-17-80
BUILDING ADDRESS		**ADDRESS**	
4203 West 84th Street		2215 West Old Shakopee Road	
CITY	**ZIP CODE**	**CITY**	**ZIP CODE**
Bloomington, MN	55437	Bloomington, MN	55431
PERSON COMPLETING FORM	**TELEPHONE**	**CONTACT PERSON**	**TELEPHONE**
Randy Smith	(612) 935-6901	Arthur Jensen	(612) 881-5811

B — BUILDING ELIGIBILITY CODE

Instructions: For blocks 1 and 2 check the box which best fits the building ownership conditions. For block 3 determine which of the four categories describes the building type and then within the category check off the sub category befitting the building function.

1. OWNERSHIP TYPE
   - ☒ Public (PUB)
   - ☐ Non-Profit Association (NAP)

2. ULTIMATE OWNER
   - ☐ County (CNTY)
   - ☒ City (CITY)
   - ☐ Township (TOWN)
   - ☐ State (STAT)
   - ☐ Public School (PUSC)
   - ☐ Private School (PRSC)
   - ☐ Non-Profit Association (NPAP)
   - ☐ Indian Tribe (INDN)

3a. SCHOOLS
   - ☐ Elementary (SCHL-ELM)
   - ☐ Secondary (SCHL-SECD)
   - ☐ Coll. or Univ. (SCHL-POST)
   - ☐ Vocational (SCHL-VOCL)
   - ☐ Education Agency (SCHL-ADMN)
   - ☐ Administration (SCHL-ADMN)
   - ☐ OTHER (SCHL-OTHR)

b. PUBLIC CARE
   - ☐ Nursing Home (PBCR-NURS)
   - ☐ Long Term Care (PBCR-TERM)
   - ☐ Rehab. Facility (PBCR-RHAB)
   - ☐ Public Health Ctr. (PBCR-HCTR)
   - ☐ Res. Child Care Ctr. (PBCR-RCCC)

c. LOCAL GOVERNMENT
   - ☐ Office (LOCG-OFFC)
   - ☐ Storage (LOCG-STRG)
   - ☐ Service (LOCG-SERV)
   - ☐ Library (LOCG-LBRY)
   - ☐ Police (LOCG-PLCE)
   - ☒ Fire (LOCG-FIRE)
   - ☐ OTHER (LOCG-OTHR)

d. HOSPITALS
   - ☐ General (HOSP-GENL)
   - ☐ Tuberculosis (HOSP-TUBR)
   - ☐ OTHER (HOSP-OTHR)

C — MINI-AUDIT FUNDING REQUEST

Instructions: With reference to page 23 entitled Funding Information, determine if the facilities are eligible for both Federal and State funding or just Federal funding. then answer the questions correctly for the situation. This section must be signed and dated by the head of the organization.

If eligible for both Federal and State Funding:
Have you received a mini-audit grant before? ☐ Yes ☒ No
Have you previously applied for mini-audit funding? ☒ Yes ☐ No
Do you wish to apply for mini-audit funding? ☐ Yes ☒ No

Date: _____

Name: _____

Signature: _____

If eligible for Federal funding only:
Have you received a mini-audit grant before? ☐ Yes ☐ No
Have you previously applied for mini-audit funding? ☐ Yes ☐ No
Do you wish to apply for mini-audit funding? ☐ Yes ☐ No
The 50% match for Federal funds will come from: (Use additional sheets if necessary.)

Date: _____

Name: _____

Signature: _____

D ENERGY REPORT CHECK-OFF

Check the type of energy report which was completed and submitted prior to this mini-audit report.

- ☐ Elementary School Energy Report (Form No. ED-00444-02)
- ☐ Secondary School Energy Report (Form No. ED-00445-02)
- XX Existing Building Energy Report (Form No. EN-00041-01)

If an energy report has not been completed previous to this mini-audit report, one must be included with this report. Elementary, secondary, and vocational schools should use form ED-00444-02 or form ED-00445-02, depending on building complexity. All other buildings should use the existing building energy report, form EN-00041-01.

E MINI-AUDIT STATEMENTS

Instructions: This section is to be completed and signed by a registered professional engineer or by a certified mini-auditor who has successfully completed the State of Minnesota's Mini-Audit Procedures Course. This section should be completed after this mini-audit report and an energy report are completed. All blanks must be filled in.

I have reviewed the energy report and/or the energy report results for this building. I found all information contained therein to be correct *OR* I have corrected any misinformation on the energy report which will be resubmitted with this mini-audit report to the Minnesota Energy Agency.

I am not directly responsible for the day to day operations of this building being audited.

I have fully disclosed my financial interests relating to this mini-audit and any energy conservation measures considered by this audit.

I have walked through this building and have found the recommendations listed in section I of this mini-audit report to be the operations and maintenance changes, and low cost energy conservation measures, which would reduce energy consumption in this building.

I have made a rough estimate, in section G, of the range of savings which may result from the implementation of all of the mini-audit opportunities listed in section I. I am not responsible if the actual savings resulting from this mini-audit do not fall within the estimated range.

Based on actual records, the energy conservation operating and maintenance procedures listed in section K ___did not___ (did, did not) save at least 20% of the building's energy consumption as specified in section I.

Based upon my observation of the physical characteristics of this building and the building's major energy using systems, I recommend that this ___should not___ (should, should not) be the subject of a maxi-audit.

I realize that this is not a final judgement, that the State reserves the right to make the maxi-audit funding determination based on this mini-audit report and other criteria.

Based upon the information in section E and the information referred to in section F, I recommend that this building ___should not___ (should, should not) undergo further solar conversion analysis, and/or ___should not___ (should, should not) undergo further analysis of the renewable resources — waste, wind, wood. (Circle proper resources)

In my judgement, as a mini-auditor, all of the above statements are true and correct.

Witnessed by:

Randy Smith
Mini-Auditor's Name (Print or Type)

Randy Smith 206
Signature

Rieke Carroll Muller Assoc., Inc.
Firm Name (if none, enter none)

P.O. Box 130 Hopkins, MN 55343
Address

(612) 935-6901
Phone

5-17-80
Date

Building Organizational Authority (Print or Type)

Signature

Date

F AUDIT TEAM

NAME	POSITION	ORGANIZATION
Randy Smith	Certified Mini-Auditor	Rieke Carroll Muller Assoc., Inc.
Reinert Ege	Maintenance Foreman	City of Bloomington

G BUILDING INFORMATION

BRIEF DESCRIPTION OF GENERAL BUILDING CONDITION (i.e. type, and function)
Good, Offices and storage of fire vehicles

MAJOR CHANGES PLANNED WITHIN NEXT 15 YEARS (i.e. demolition, rehabilitation, conversion from one building type to another)
None

STRUCTURAL COMPONENTS OF ROOF (i.e. metal beams, wooden rafters, concrete)
Concrete Plank

ROOFING MATERIAL (i.e. tar and gravel, shingles, tile)
Tar & Gravel

H SOLAR POTENTIAL INFORMATION

INSTRUCTIONS: Correctly answer the following questions for the building being mini-audited.

Is there open land adjacent to the building?
☐ Yes ☒ No

Solar collectors need to be located in an unshaded area. Is the roof of the building and the south facing wall unshaded between the hours of 9 a.m. and 3 p.m.?
Roof: ☒ Yes ☐ No
South facing Wall: ☒ Yes ☐ No

If the roof or wall are partly shaded, what percentage of the surface is unshaded?
% of roof unshaded _____ %
% of south facing wall unshaded _____ %

What is the overall shape of the building?
☒ square ☐ rectangle ☐ H-shaped ☐ E-shaped ☐ other (specify) _____

Is the roof of the building flat or pitched?
☒ flat ☐ pitched

If pitched, what is the compass orientation of the ridgeline? _____

If pitched, what is the angle that the roof makes with horizontal? _____°

Are there large obstructions on the roof such as chimneys, rooms for mechanical equipment, ventilating units, water towers, etc?
☐ Yes ☒ No

What is the exterior facing material for the south facing wall? Face brick and wood.

What percentage of the south facing wall is glass? 3 %

Is the building's space heating equipment located within or on the building? (A no answer indicates the equipment is in a separate building.)
☒ Yes ☐ No

If the space heating equipment is inside the building, where is it located?
☒ Ground Floor ☐ Basement ☐ Roof ☐ Other (specify) _____

Is the building's water heating equipment located within the building? (A no answer indicates the equipment is in a separate building.)
☒ Yes ☐ No

If the water heating equipment is inside the building, where is it located?
☒ Ground Floor ☐ Basement ☐ Other (specify) _____

Is the water heating system a central system, does it consist of multiple units, or is it a combination of the central and multiple units?
☒ Central ☐ Multiple ☐ Combination

I — 20% SAVINGS DATA

Instructions: Enter the total energy used of each fuel type for the base period and the year when there was a 20% or greater energy savings. Indicate the unit of measure. Enter the appropriate conversion factor from Appendix B to convert energy usage into Btu's. Be sure to enter the fiscal years of which the data applies. Refer to pages 7 and 15 for a complete explanation of this section.

BASE PERIOD YEAR — Fiscal Year _____

ENERGY TYPE	ENERGY USAGE	CONVERSION FACTOR	BTU USAGE
Electricity			
Fuel 1			
Fuel 2			
TOTAL			

20% SAVINGS YEAR — Fiscal Year _____

ENERGY TYPE	ENERGY USAGE	CONVERSION FACTOR	BTU USAGE
Electricity			
Fuel 1			
Fuel 2			
TOTAL			

J — SAVINGS ESTIMATION

Instructions: This section is to be completed by the mini-auditor after the walk-thru portion of the mini-audit. First, check the appropriate boxes which state the roughly estimated range of the percent of total electrical and fuel consumption which would be saved resulting from the implementation of all of the new mini-audit opportunities listed in section L. Secondly, calculate the range of energy and cost savings by multiplying the estimated percentages by the annual electrical and fuel consumption data on the energy report.

1

Check two boxes in each category —

Range of Electrical Savings — ☒ 0% ☒ 5% ☐ 10% ☐ 15% ☐ 20% ☐ 25% ☐ other (specify) _____

Range of Fuel Savings — ☐ 0% ☒ 5% ☐ 10% ☐ 15% ☐ 20% ☐ 25% ☐ other (specify) _____

2

Calculate ranges of energy and cost savings —

Range of Electrical Savings

	% Range		Annual Electrical Consumption		Range of Energy Savings		% Range		Annual Electrical Dollars Spent		Range of Electrical Dollars Savings
lower bound	0 %	x	45842 kwh	=	0 kwh,		0 %	x	$2054.97	=	$ 0
	to				to		to				to
upper bound	5 %	x	45842 kwh	=	2292.1 kwh,		5 %	x	$2054.97	=	$ 102.75

3

Range of Fuel Savings

	% Range		Annual Fuel Consumption		Range of Fuel Savings		% Range		Annual Fuel Dollars Spent		Range of Fuel Dollars Savings
lower bound	5 %	x	80.7×10^6 Btu	=	40.3×10^5 Btu,		5 %	x	$1828.74	=	$ 91.44
	to				to		to				to
upper bound	10 %	x	80.7×10^6 Btu	=	80.7×10^5 Btu,		10 %	x	$1828.74	=	$ 182.87

The mini-auditor is not responsible if actual savings resulting from the implementation of the energy conservation opportunities listed in section I do not fall between the roughly estimated ranges which are specified.

K

Instructions: Read through the list of energy conservation opportunities provided. As you read through the items, list below those items which have already been undertaken in your facility. The description of the past energy conservation action should contain the specific building location where the recommendation applies, if applicable. Indicate the date of implementation of each item and its classification number. Energy conserving items which have been undertaken and are not on the list provided should also be included along with their appropriate classification numbers. The classification number should be taken from the classification scheme for energy conservation opportunities listed on pages 25 through 37. *This section of the mini-audit report should be completed by building personnel prior to the walk-through by the mini-auditor.*

ITEM NO.	CLASSIFICATION NO.		PAST ENERGY CONSERVATION ACTIONS	ENERGY SAVINGS OPTIONAL:	ENERGY COST SAVINGS OPTIONAL:	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS				

Note Reproduce this page as necessary

NEW OPPORTUNITIES

Instructions: Read through the energy conservation recommendation list provided. Then walk through the building with the list. Examine the suggested maintenance and operational changes, and any other low cost energy conservation measures, that pertain to the facility. As you go along, record the item number, the classification number of the recommendation, and the new mini-audit opportunity. The description of the mini-audit opportunity should contain the specific building location where the recommendation applies, if applicable. Any recommendation not found on the list may also be included. For those other recommendations, assign an appropriate classification number from the classification scheme for energy conservation opportunities listed on pages 25 through 37. The date of implementation should only be completed as the recommendation is implemented. *This section of the mini-audit report should be completed by the mini-audit team during the building walk-through.*

OPTIONAL: OPTIONAL:

ITEM NO.	CLASSIFICATION NO. MAJOR CLASS	CLASSIFICATION NO. SUB CLASS	NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS	ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
1	1	1	Keep all controls free of dust.			
2	2	2	Weatherstrip all exterior doors including garage doors.			
3	2	6	Inspect the roof and seal all cracks that allow air and water to enter.			
4	2	6	Check the insulation on the roof.			
5	2	6	Insulate the roof areas if needed.			
6	2	8	Insulate walls with rigid insulation on inside surfaces, or place loose fill insulation in wall cavaties.			
7	2	10	Replace single glazed windows with double glazed thermopanes.			
8	3	1	Check operation of entire heating/cooling control system, including valves and dampers.			
9	3	1	Check the calibration of all controllers and devices for proper settings and operations.			
10	3	1	Raise the supply air temperature for cooling to the highest point necessary to provide minimum required cooling.			
11	3	1	Lower the supply air temperature for heating to the lowest point necessary to provide minimum required heating.			
12	3	1	65°F maximum occupied, 60°F maximum unoccupied during the heating season.			
13	3	1	78°F minimum when occupied and no cooling when unoccupied during the cooling season.			
14	3	3	Keep fan blades clear.			
15	3	3	Inspect and lubricate bearings of fan motors.			
16	3	3	Inspect drive belts. Adjust or replace as necessary to ensure proper operation.			

Note 1: Date of Implementation should only be completed as the recommendation is implemented. The mini-audit report may be submitted to the Minnesota Energy Agency before the "Date of Implementation" has been completed.

Note 2: Reproduce this page as necessary.

F NEW OPPORTUNITIES

Instructions: Read through the energy conservation recommendation list provided. Then walk through the building with the list. Examine the suggested maintenance and operational changes, and any other low cost energy conservation measures, that pertain to the facility. As you go along record the item number, the classification number of the recommendation, and the new mini-audit opportunity. The description of the mini-audit opportunity should contain the specific building location where the recommendation applies, if applicable. Any recommendation not found on the list may also be included. For those other recommendations, assign an appropriate classification number from the classification scheme for energy conservation opportunities listed on pages 25 through 37. The date of implementation should only be completed as the recommendation is implemented. *This section of the mini-audit report should be completed by the mini-audit team during the building walk-through.*

ITEM NO	CLASSIFICATION NO. MAJOR CLASS	CLASSIFICATION NO. SUB CLASS	NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS OPTIONAL:	ENERGY COST SAVINGS OPTIONAL:	DATE OF IMPLEMENTATION
17	3	3	Inspect fans for normal operation.			
18	3	3	Keep condenser coil face clean to permit proper air flow.			
19	3	3	Insepct damper blades and linkages. Clean, oil and adjust.			
20	3	3	Take special note of fresh air dampers making sure that they close tightly			
			and be sure to repair, replace or provide blade edge gaskets and gasketing			
			at the end of blades.			
21	4	1	Instruct occupants and mainteance personnel to switch off all lights			
			when they are not needed.			
22	4	2	Clean windows and skylights.			
23	4	3	Clean fixtures and lamps regularly.			
24	4	4	Use lower wattage lamps to provide the necessary illumination.			
25	4	4	Allow part of a lighting system to be turned off, while maintaining			
			the necessary light.			
26	5	1	Keep records of the operating schedule, monthly energy consumption and pur-			
			chase of any new equipment that affects energy consumption of			
			efficiency of the building. These records will indicate the impact			
			of energy conservation measures.			
27	6	2	All insulation applied to a hot water system should be kept in good			
			condition.			
28	6	2	The burner system of fossil-fuel water heaters should be kept in			
			good condtition.			
29	6	2	All electric heating equipment should be checked for corroded			
			elements and loose connections and repaired as required.			
30	6	2	Periodically drain and remove the sediment from the water heater.			
31	7	4	Clean air-sides, remove soot, and scrape scale in forced warm air furnaces.			

Note 1: Date of Implementation should only be completed as the recommendation is implemented. The mini-audit report may be submitted to the Minnesota Energy Agency before the "Date of Implementation" has been completed.

Note 2: Reproduce this page as necessary.

L NEW OPPORTUNITIES

Instructions: Read through the energy conservation recommendation list provided. Then walk through the building with the list. Examine suggested maintenance and operational changes, and any other low cost energy conservation measures, that pertain to the facility. As you go along record the item number, the classification number of the recommendation, and the new mini-audit opportunity. The description of the mini-audit opportunity should contain the specific building location where the recommendation applies, if applicable. Any recommendation not found on the list may also be included. For those other recommendations, assign an appropriate classification number from the classification scheme for energy conservation opportunities listed on pages 25 through 37. The date of implementation should only be completed as the recommendation is implemented. *This section of the mini-audit report should be completed by the mini-audit team during the building walk-through.*

ITEM NO	CLASSIFICATION NO		NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS OPTIONAL:	ENERGY COST SAVINGS OPTIONAL:	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS				
32	7	3	If the firing rate of gas or oil burners is too high, it causes short cycling and excessive fuel consumption. Too low a rate requires constant operating and delivers inadequate heat to the spaces.			
33	7	4	Maintain the lowest possible hot water temperature which will meet domestic hot water needs.			
34	7	4	Clean filters regularly in forced warm air units to reduce the operating time of the furnace.			
35	7	4	Turn off gas pilots for furnaces, boilers, and space heaters during non-heating months and during long unoccupied periods.			
36	7	4	Keep all heat exchanger surfaces clean. Check air-to-fuel ratio and adjust as necessary.			
37	7	4	Inspect casing for air leaks and seal as necessary.			
38	7	4	Follow guidelines suggested for fan and motor maintenance of unit heaters.			

Note 1 Date of Implementation should only be completed as the recommendation is implemented. The mini-audit report may be submitted to the Minnesota Energy Agency before the "Date of Implementation" has been completed.

Note 2 Reproduce this page as necessary.

MINI-AUDIT REPORT

FORM NO. MIN-01

A — CONTACT DATA

BUILDING NAME		NAME OF ORGANIZATION		DATE
Fire Station #5		City of Bloomington		5-17-80
BUILDING ADDRESS		**ADDRESS**		
10540 Bush Lake Road		2215 West Old Shakopee Road		
CITY	**ZIP CODE**	**CITY**	**ZIP CODE**	
Bloomington, MN	55438	Bloomington, MN	55431	
PERSON COMPLETING FORM	**TELEPHONE**	**CONTACT PERSON**	**TELEPHONE**	
Randy Smith	(612) 935-6901	Arthur Jensen	(612) 881-5811	

B — BUILDING ELIGIBILITY CODE

Instructions: For blocks 1 and 2 check the box which best fits the building ownership conditions. For block 3 determine which of the four categories describes the building type and then within the category check off the sub category befitting the building function.

1. OWNERSHIP TYPE
   - ☒ Public (PUB)
   - ☐ Non-Profit Association (NAP)

2. ULTIMATE OWNER
   - ☐ County (CNTY)
   - ☒ City (CITY)
   - ☐ Township (TOWN)
   - ☐ State (STAT)
   - ☐ Public School (PUSC)
   - ☐ Private School (PRSC)
   - ☐ Non-Profit Association (NPAP)
   - ☐ Indian Tribe (INDN)

3a. SCHOOLS
   - ☐ Elementary (SCHL-ELM)
   - ☐ Secondary (SCHL-SECD)
   - ☐ Coll. or Univ. (SCHL-POST)
   - ☐ Vocational (SCHL-VOCL)
   - ☐ Education Agency (SCHL-ADMN)
   - ☐ Administration (SCHL-ADMN)
   - ☐ OTHER (SCHL-OTHR)

b. PUBLIC CARE
   - ☐ Nursing Home (PBCR-NURS)
   - ☐ Long Term Care (PBCR-TERM)
   - ☐ Rehab. Facility (PBCR-RHAB)
   - ☐ Public Health Ctr. (PBCR-HCTR)
   - ☐ Res. Child Care Ctr. (PBCR-RCCC)

c. LOCAL GOVERNMENT
   - ☐ Office (LOCG-OFFC)
   - ☐ Storage (LOCG-STRG)
   - ☐ Service (LOCG-SERV)
   - ☐ Library (LOCG-LBRY)
   - ☐ Police (LOCG-PLCE)
   - ☒ Fire (LOCG-FIRE)
   - ☐ OTHER (LOCG-OTHR)

d. HOSPITALS
   - ☐ General (HOSP-GENL)
   - ☐ Tuberculosis (HOSP-TUBR)
   - ☐ OTHER (HOSP-OTHR)

C — MINI-AUDIT FUNDING REQUEST

Instructions: With reference to page 23 entitled Funding Information, determine if the facilities are eligible for both Federal and State funding or just Federal funding. then answer the questions correctly for the situation. This section must be signed and dated by the head of the organization.

If eligible for both Federal and State Funding:
Have you received a mini-audit grant before? ☐ Yes ☒ No
Have you previously applied for mini-audit funding? ☒ Yes ☐ No
Do you wish to apply for mini-audit funding? ☐ Yes ☒ No

Date: _____

Name: _____

Signature: _____

If eligible for Federal funding only:
Have you received a mini-audit grant before? ☐ Yes ☐ No
Have you previously applied for mini-audit funding? ☐ Yes ☐ No
Do you wish to apply for mini-audit funding? ☐ Yes ☐ No
The 50% match for Federal funds will come from: (Use additional sheets if necessary.)

Date: _____

Name: _____

Signature: _____

D ENERGY REPORT CHECK-OFF

Check the type of energy report which was completed and submitted prior to this mini-audit report.

- ☐ Elementary School Energy Report (Form No. ED-00444-02)
- ☐ Secondary School Energy Report (Form No. ED-00445-02)
- ☒ Existing Building Energy Report (Form No. EN-00041-01)

If an energy report has not been completed previous to this mini-audit report, one must be included with this report. Elementary, secondary, and vocational schools should use form ED-00444-02 or form ED-00445-02, depending on building complexity. All other buildings should use the existing building energy report, form EN-00041-01.

E MINI-AUDIT STATEMENTS

Instructions: This section is to be completed and signed by a registered professional engineer or by a certified mini-auditor who has successfully completed the State of Minnesota's Mini-Audit Procedures Course. This section should be completed after this mini-audit report and an energy report are completed. All blanks must be filled in.

I have reviewed the energy report and/or the energy report results for this building. I found all information contained therein to be correct *OR* I have corrected any misinformation on the energy report which will be resubmitted with this mini-audit report to the Minnesota Energy Agency.

I am not directly responsible for the day to day operations of this building being audited.

I have fully disclosed my financial interests relating to this mini-audit and any energy conservation measures considered by this audit.

I have walked through this building and have found the recommendations listed in section I of this mini-audit report to be the operations and maintenance changes, and low cost energy conservation measures, which would reduce energy consumption in this building.

I have made a rough estimate, in section G, of the range of savings which may result from the implementation of all of the mini-audit opportunities listed in section I. I am not responsible if the actual savings resulting from this mini-audit do not fall within the estimated range.

Based on actual records, the energy conservation operating and maintenance procedures listed in section K ___did not___ (did, did not) save at least 20% of the building's energy consumption as specified in section I.

Based upon my observation of the physical characteristics of this building and the building's major energy using systems, I recommend that this ___should not___ (should, should not) be the subject of a maxi-audit.
I realize that this is not a final judgement, that the State reserves the right to make the maxi-audit funding determination based on this mini-audit report and other criteria.

Based upon the information in section E and the information referred to in section F, I recommend that this building ___should not___ (should, should not)

undergo further solar conversion analysis, and/or ___should not___ (should, should not) undergo further analysis of the renewable resources — waste, wind, wood. (Circle proper resources)

In my judgement, as a mini-auditor, all of the above statements are true and correct.

Witnessed by:

Randy Smith
Mini-Auditor's Name (Print or Type)

Randy Smith 206
Signature

Rieke Carroll Muller Assoc. Inc.
Firm Name (if none, enter none)

PO Box 130 Hopkins, MN 55343
Address

(612) 935-6901
Phone

5-17-80
Date

Building Organizational Authority (Print or Type)

Signature

Date

F AUDIT TEAM

NAME	POSITION	ORGANIZATION
Randy Smith	Certified Mini-Auditor	Rieke Carroll Muller Assoc., Inc.
Reinert Ege	Maintenance Foreman	City of Bloomington

G BUILDING INFORMATION

BRIEF DESCRIPTION OF GENERAL BUILDING CONDITION (i.e. type, and function)
Good

MAJOR CHANGES PLANNED WITHIN NEXT 15 YEARS (i.e. demolition, rehabilitation, conversion from one building type to another)
None

STRUCTURAL COMPONENTS OF ROOF (i.e. metal beams, wooden rafters, concrete)
Concrete

ROOFING MATERIAL (i.e. tar and gravel, shingles, tile)
Tar and Gravel

H SOLAR POTENTIAL INFORMATION

INSTRUCTIONS: Correctly answer the following questions for the building being mini-audited.

Is there open land adjacent to the building?
☒ Yes ☐ No

Solar collectors need to be located in an unshaded area. Is the roof of the building and the south facing wall unshaded between the hours of 9 a.m. and 3 p.m.?
Roof: ☒ Yes ☐ No
South facing Wall: ☒ Yes ☐ No

If the roof or wall are partly shaded, what percentage of the surface is unshaded?
% of roof unshaded _____ %
% of south facing wall unshaded _____ %

What is the overall shape of the building?
☐ square ☒ rectangle ☐ H-shaped ☐ E-shaped ☐ other (specify) _____

Is the roof of the building flat or pitched?
☒ flat ☐ pitched

If pitched, what is the compass orientation of the ridgeline? _____

If pitched, what is the angle that the roof makes with horizontal? _____°

Are there large obstructions on the roof such as chimneys, rooms for mechanical equipment, ventilating units, water towers, etc?
☒ Yes ☐ No

What is the exterior facing material for the south facing wall? face brick

What percentage of the south facing wall is glass? 5 %

Is the building's space heating equipment located within or on the building? (A no answer indicates the equipment is in a separate building.)
☒ Yes ☐ No

If the space heating equipment is inside the building, where is it located?
☒ Ground Floor ☐ Basement ☐ Roof ☐ Other (specify) _____

Is the building's water heating equipment located within the building? (A no answer indicates the equipment is in a separate building.)
☒ Yes ☐ No

If the water heating equipment is inside the building, where is it located?
☒ Ground Floor ☐ Basement ☐ Other (specify) _____

Is the water heating system a central system, does it consist of multiple units, or is it a combination of the central and multiple units?
☒ Central ☐ Multiple ☐ Combination

I

Instructions: Enter the total energy used of each fuel type for the base period and the year when there was a 20% or greater energy savings. Indicate the unit of measure. Enter the appropriate conversion factor from Appendix B to convert energy usage into Btu's. Be sure to enter the fiscal years of which the data applies. Refer to pages 7 and 15 for a complete explanation of this section.

20% SAVINGS DATA

BASE PERIOD YEAR — Fiscal Year _____

ENERGY TYPE	ENERGY USAGE	CONVERSION FACTOR	BTU USAGE
Electricity			
Fuel 1			
Fuel 2			
TOTAL			

20% SAVINGS YEAR — Fiscal Year _____

ENERGY TYPE	ENERGY USAGE	CONVERSION FACTOR	BTU USAGE
Electricity			
Fuel 1			
Fuel 2			
TOTAL			

J

Instructions: This section is to be completed by the mini-auditor after the walk-thru portion of the mini-audit. First, check the appropriate boxes which state the roughly estimated range of the percent of total electrical and fuel consumption which would be saved resulting from the implementation of all of the new mini-audit opportunities listed in section L. Secondly, calculate the range of energy and cost savings by multiplying the estimated percentages by the annual electrical and fuel consumption data on the energy report.

1

Check two boxes in each category —

Range of Electrical Savings — ☒ 0% ☒ 5% ☐ 10% ☐ 15% ☐ 20% ☐ 25% ☐ other (specify) _____

Range of Fuel Savings — ☐ 0% ☒ 5% ☒ 10% ☐ 15% ☐ 20% ☐ 25% ☐ other (specify) _____

2

Calculate ranges of energy and cost savings —

Range of Electrical Savings

	% Range		Annual Electrical Consumption		Range of Energy Savings	% Range		Annual Electrical Dollars Spent		Range of Electrical Dollars Savings
lower bound	0 %	x	40760 kwh	=	0 kwh,	0 %	x	$ 1738.43	=	$ 0
to upper bound	5 %	x	40760 kwh	=	2038 kwh,	5 %	x	$ 1738.43	=	$ 86.92

3

Range of Fuel Savings

	% Range		Annual Fuel Consumption		Range of Fuel Savings	% Range		Annual Fuel Dollars Spent		Range of Fuel Dollars Savings
lower bound	5 %	x	72.0×10^6 Btu	=	36.0×10^5 Btu,	5 %	x	$ 1623.32	=	$ 81.17
to upper bound	10 %	x	72.0×10^6 Btu	=	72.0×10^5 Btu,	10 %	x	$ 1623.32	=	$ 162.33

SAVINGS ESTIMATION

The mini-auditor is not responsible if actual savings resulting from the implementation of the energy conservation opportunities listed in section I do not fall between the roughly estimated ranges which are specified.

K

Instructions: Read through the list of energy conservation opportunities provided. As you read through the items, list below those items which have already been undertaken in your facility. The description of the past energy conservation action should contain the specific building location where the recommendation applies, if applicable. Indicate the date of implementation of each item and its classification number. Energy conserving items which have been undertaken and are not on the list provided should also be included along with their appropriate classification numbers. The classification number should be taken from the classification scheme for energy conservation opportunities listed on pages 25 through 37. *This section of the mini-audit report should be completed by building personnel prior to the walk-through by the mini-auditor.*

ITEM NO.	CLASSIFICATION NO.		PAST ENERGY CONSERVATION ACTIONS	OPTIONAL:	OPTIONAL:	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS		ENERGY SAVINGS	ENERGY COST SAVINGS	

Note. Reproduce this page as necessary

NEW OPPORTUNITIES

Instructions: Read through the energy conservation recommendation list provided. Then walk through the building with the list. Examine the suggested maintenance and operational changes, and any other low cost energy conservation measures, that pertain to the facility. As you go along, record the item number, the classification number of the recommendation, and the new mini-audit opportunity. The description of the mini-audit opportunity should contain the specific building location where the recommendation applies, if applicable. Any recommendation not found on the list may also be included. For those other recommendations, assign an appropriate classification number from the classification scheme for energy conservation opportunities listed on pages 25 through 37. The date of implementation should only be completed as the recommendation is implemented. *This section of the mini-audit report should be completed by the mini-audit team during the building walk-through.*

ITEM NO.	CLASSIFICATION NO. MAJOR CLASS	CLASSIFICATION NO. SUB CLASS	NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS OPTIONAL:	ENERGY COST SAVINGS OPTIONAL:	DATE OF IMPLEMENTATION
1	1	1	Keep all controls free of dust.			
2	2	2	Weatherstrip all exterior doors including garage doors.			
3	2	6	Inspect the roof and seal all cracks that allow outdoor air and water to enter.			
4	2	6	Check insulation on the roof.			
5	2	6	Insulate the roof areas.			
6	2	10	Replace single glazed windows with double glazed thermopanes.			
7	3	1	Check operation of entire heating/cooling control system, including control valves and dampers.			
8	3	1	Check the calibration of all controllers and devices for proper settings and operations.			
9	3	1	Raise the supply air temperature for cooling to the highest point necessary to provide minimum required cooling.			
10	3	1	Lower the supply air temperature for heating to the lowest point necessary to provide minimum required heating.			
11	3	1	Consider regulating the fresh air dampers with enthalpy control so that the building can be cooled with outdoor air when this saves energy.			
12	3	1	65°F maximum occupied, 60°F maximum unoccupied during the heating season.			
13	3	1	78°F minimum when occupied and no cooling when unoccupied during the cooling season.			
14	3	1	Provide atmospheric cooling as long as possible.			
15	3	2	Clean and remove obstructions from all room air outlets and inlets (diffusers, registers and grillers). They should be kept clean and free of all dirt and foreign materials.			

Note 1 Date of Implementation should only be completed as the recommendation is implemented. The mini-audit report may be submitted to the Minnesota Energy Agency before the "Date of Implementation" has been completed.

Note 2 Reproduce this page as necessary.

F NEW OPPORTUNITIES

Instructions: Read through the energy conservation recommendation list provided. Then walk through the building with the list. Examine suggested maintenance and operational changes, and any other low cost energy conservation measures, that pertain to the facility. As you go along record the item number, the classification number of the recommendation, and the new mini-audit opportunity. The description of the mini-audit opportunity should contain the specific building location where the recommendation applies, if applicable. Any recommendation not found on the list may also be included. For those other recommendations, assign an appropriate classification number from the classification scheme for energy conservation opportunities listed on pages 25 through 37. The date of implementation should only be completed as the recommendation is implemented. *This section of the mini-audit report should be completed by the mini-audit team during the building walk-through.*

ITEM NO	CLASSIFICATION NO		NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS OPTIONAL:	ENERGY COST SAVINGS OPTIONAL:	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS				
16	3	2	Clean and remove obstructions from all room air outlets (diffusers, registers and grillers). They should be kept clean and free of all dirt and foreign materials.			
17	3	3	Inspect and lubricate bearings of fans.			
18	3	3	Inpsect drive belts. Adjust or replace as necessary to ensure proper operation.			
19	3	3	Inspect fans for normal operation.			
20	3	3	Make sure that all fans, frequently inoperative in unit heaters, fan coil units, and unit ventilators are running normally to increase the heat transfer rate from heating coils.			
21	3	3	Keep condenser coil face clean to permit proper air flow.			
22	3	3	Inspect ductwork for air leakage. Seal all leaks by taping or caulking.			
23	3	3	Inspect ductwork insulation.			
24	3	3	Inspect damper blades and linkages. Clean, oil and adjust.			
25	3	3	Take special note of fresh air dampers making sure that they close tightly and be sure to repair, replace or provide blade edge gaskets and gasketing at the end of blades.			
26	4	1	Instruct occupants and maintenance personnel to switch off all lights when they are not needed.			
27	4	3	Clean fixtures and lamps regularly.			
28	4	4	Use lower wattage lamps to provide the necessary illumination.			
29	4	4	Allow part of a lighting system to be turned off, while maintaining the necessary light.			
30	5	1	Keep records of the operating schedule, monthly energy consumption and purchase of any new equipment that affects energy consumption of			

Note 1 Date of Implementation should only be completed as the recommendation is implemented. The mini-audit report may be submitted to the Minnesota Energy Agency before the "Date of Implementation" has been completed.

Note 2 Reproduce this page as necessary.

NEW OPPORTUNITIES

Instructions: Read through the energy conservation recommendation list provided. Then walk through the building with the list. Examine suggested maintenance and operational changes, and any other low cost energy conservation measures, that pertain to the facility. As you go along, record the item number, the classification number of the recommendation, and the new mini-audit opportunity. The description of the mini-audit opportunity should contain the specific building location where the recommendation applies, if applicable. Any recommendation not found on the list may also be included. For those other recommendations, assign an appropriate classification number from the classification scheme for energy conservation opportunities listed on pages 25 through 37. The date of implementation should only be completed as the recommendation is implemented. *This section of the mini-audit report should be completed by the mini-audit team during the building walk-through.*

ITEM NO	CLASSIFICATION NO		NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS	ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS		OPTIONAL:	OPTIONAL:	
			efficiency of the builing. These records will indicate the impact			
			of energy conservation measures.			
31	5	1	Review the record books on a regular basis.			
32	6	2	All insulation applied to a hot water system should be kept in good			
			condition.			
33	6	2	All electric heating equipment should be checked for corroded elements			
			and loose connections and repaired as required.			
34	7	3	If the firing rate of gas burners is too high, it causes short cycling			
			and excessive fuel consumption. Too low a rate requires constant			
			operating and delivers inadequate heat to the spaces.			
35	7	4	Maintain the lowest possible hot water temperature which will meet			
			domestic hot water needs.			
36	7	4	Clean filters regularly in forced warm air units to reduce the operat-			
			ing time of the furnace.			
37	7	4	Turn off gas pilots for furnaces, boilers, and space heaters during			
			the non-heating months and during long unoccupied periods.			
38	7	4	Keep all heat exchanger surfaces clean. Check air-to-fuel ratio			
			and adjust as necessary.			
39	7	4	Inpsect casing for air leaks and seal as necessary.			
40	7	4	Follow guidelines suggested for fan and motor maintenance.			

Note 1 Date of Implementation should only be completed as the recommendation is implemented. The mini-audit report may be submitted to the Minnesota Energy Agency before the "Date of Implementation" has been completed.

Note 2 Reproduce this page as necessary

MINI-AUDIT REPORT

FORM NO. MIN-01

A — CONTACT DATA

BUILDING NAME		NAME OF ORGANIZATION	DATE
Fire Station #6		City of Bloomington	5-17-80
BUILDING ADDRESS		**ADDRESS**	
8601 Lakeview Road		2215 West Old Shakopee Road	
CITY	**ZIP CODE**	**CITY**	**ZIP CODE**
Bloomington, MN	55438	Bloomington, MN	55431
PERSON COMPLETING FORM	**TELEPHONE**	**CONTACT PERSON**	**TELEPHONE**
Randy Smith	(612) 935-6901	Arthur Jensen	(612) 881-5811

B — BUILDING ELIGIBILITY CODE

Instructions: For blocks 1 and 2 check the box which best fits the building ownership conditions. For block 3 determine which of the four categories describes the building type and then within the category check off the sub category befitting the building function.

1. OWNERSHIP TYPE
   - [X] Public (PUB)
   - [ ] Non-Profit Association (NAP)

2. ULTIMATE OWNER
   - [ ] County (CNTY)
   - [X] City (CITY)
   - [ ] Township (TOWN)
   - [ ] State (STAT)
   - [ ] Public School (PUSC)
   - [ ] Private School (PRSC)
   - [ ] Non-Profit Association (NPAP)
   - [ ] Indian Tribe (INDN)

3a. SCHOOLS
   - [ ] Elementary (SCHL-ELM)
   - [ ] Secondary (SCHL-SECD)
   - [ ] Coll. or Univ. (SCHL-POST)
   - [ ] Vocational (SCHL-VOCL)
   - [ ] Education Agency (SCHL-ADMN)
   - [ ] Administration (SCHL-ADMN)
   - [ ] OTHER (SCHL-OTHR)

b. PUBLIC CARE
   - [ ] Nursing Home (PBCR-NURS)
   - [ ] Long Term Care (PBCR-TERM)
   - [ ] Rehab. Facility (PBCR-RHAB)
   - [ ] Public Health Ctr. (PBCR-HCTR)
   - [ ] Res. Child Care Ctr. (PBCR-RCCC)

c. LOCAL GOVERNMENT
   - [ ] Office (LOCG-OFFC)
   - [ ] Storage (LOCG-STRG)
   - [ ] Service (LOCG-SERV)
   - [ ] Library (LOCG-LBRY)
   - [X] Police (LOCG-PLCE)
   - [X] Fire (LOCG-FIRE)
   - [ ] OTHER (LOCG-OTHR)

d. HOSPITALS
   - [ ] General (HOSP-GENL)
   - [ ] Tuberculosis (HOSP-TUBR)
   - [ ] OTHER (HOSP-OTHR)

C — MINI-AUDIT FUNDING REQUEST

Instructions: With reference to page 23 entitled Funding Information, determine if the facilities are eligible for both Federal and State funding or just Federal funding. then answer the questions correctly for the situation. This section must be signed and dated by the head of the organization.

If eligible for both Federal and State Funding:
- Have you received a mini-audit grant before? [ ] Yes [X] No
- Have you previously applied for mini-audit funding? [X] Yes [ ] No
- Do you wish to apply for mini-audit funding? [ ] Yes [X] No

Date: _____

Name: _____

Signature: _____

If eligible for Federal funding only:
- Have you received a mini-audit grant before? [ ] Yes [ ] No
- Have you previously applied for mini-audit funding? [ ] Yes [ ] No
- Do you wish to apply for mini-audit funding? [ ] Yes [ ] No
- The 50% match for Federal funds will come from: (Use additional sheets if necessary.)

Date _____

Name: _____

Signature: _____

D ENERGY REPORT CHECK-OFF

Check the type of energy report which was completed and submitted prior to this mini-audit report.

- ☐ Elementary School Energy Report (Form No. ED-00444-02)
- ☐ Secondary School Energy Report (Form No. ED-00445-02)
- ☒ Existing Building Energy Report (Form No. EN-00041-01)

If an energy report has not been completed previous to this mini-audit report, one must be included with this report. Elementary, secondary, and vocational schools should use form ED-00444-02 or form ED-00445-02, depending on building complexity. All other buildings should use the existing building energy report, form EN-00041-01.

E

Instructions: This section is to be completed and signed by a registered professional engineer or by a certified mini-auditor who has successfully completed the State of Minnesota's Mini-Audit Procedures Course. This section should be completed after this mini-audit report and an energy report are completed. All blanks must be filled in.

I have reviewed the energy report and/or the energy report results for this building. I found all information contained therein to be correct *OR* I have corrected any misinformation on the energy report which will be resubmitted with this mini-audit report to the Minnesota Energy Agency.

I am not directly responsible for the day to day operations of this building being audited.

I have fully disclosed my financial interests relating to this mini-audit and any energy conservation measures considered by this audit.

I have walked through this building and have found the recommendations listed in section I of this mini-audit report to be the operations and maintenance changes, and low cost energy conservation measures, which would reduce energy consumption in this building.

I have made a rough estimate, in section G, of the range of savings which may result from the implementation of all of the mini-audit opportunities listed in section I. I am not responsible if the actual savings resulting from this mini-audit do not fall within the estimated range.

Based on actual records, the energy conservation operating and maintenance procedures listed in section K did not (did, did not) save at least 20% of the building's energy consumption as specified in section I.

Based upon my observation of the physical characteristics of this building and the building's major energy using systems, I recommend that this should not (should, should not) be the subject of a maxi-audit.
I realize that this is not a final judgement, that the State reserves the right to make the maxi-audit funding determination based on this mini-audit report and other criteria.

Based upon the information in section E and the information referred to in section F, I recommend that this building should not (should, should not) undergo further solar conversion analysis, and/or should not (should, should not) undergo further analysis of the renewable resources — waste, wind, wood. (Circle proper resources)

In my judgement, as a mini-auditor, all of the above statements are true and correct.

Witnessed by:

Randy Smith
Mini-Auditor's Name (Print or Type)

Randy Smith 206
Signature

Rieke Carroll Muller Assoc., Inc.
Firm Name (if none, enter none)

PO Box 130 Hopkins, MN 55343
Address

(612) 935-6901
Phone

5-17-80
Date

Building Organizational Authority (Print or Type)

Signature

Date

MINI-AUDIT STATEMENTS

F AUDIT TEAM

NAME	POSITION	ORGANIZATION
Randy Smith	Certified Mini Auditor	Rieke Carroll Muller Associates, Inc.
Reinert Ege	Maintenance Foreman	City of Bloomington

G BUILDING INFORMATION

BRIEF DESCRIPTION OF GENERAL BUILDING CONDITION (i.e. type, and function)
Good, Storage of Fire Vehicles

MAJOR CHANGES PLANNED WITHIN NEXT 15 YEARS (i.e. demolition, rehabilitation, conversion from one building type to another)
None

STRUCTURAL COMPONENTS OF ROOF (i.e. metal beams, wooden rafters, concrete)
Concrete

ROOFING MATERIAL (i.e. tar and gravel, shingles, tile)
Tar and Gravel

H SOLAR POTENTIAL INFORMATION

INSTRUCTIONS: Correctly answer the following questions for the building being mini-audited.

Is there open land adjacent to the building?
☒ Yes ☐ No

Solar collectors need to be located in an unshaded area. Is the roof of the building and the south facing wall unshaded between the hours of 9 a.m. and 3 p.m.?
Roof: ☒ Yes ☐ No
South facing Wall: ☒ Yes ☐ No

If the roof or wall are partly shaded, what percentage of the surface is unshaded?
% of roof unshaded _____ %
% of south facing wall unshaded _____ %

What is the overall shape of the building?
☒ square ☐ rectangle ☐ H-shaped ☐ E-shaped ☐ other (specify) _____

Is the roof of the building flat or pitched?
☒ flat ☐ pitched

If pitched, what is the compass orientation of the ridgeline? _____

If pitched, what is the angle that the roof makes with horizontal? _____ °

Are there large obstructions on the roof such as chimneys, rooms for mechanical equipment, ventilating units, water towers, etc?
☐ Yes ☒ No

What is the exterior facing material for the south facing wall? Face brick

What percentage of the south facing wall is glass? 5 %

Is the building's space heating equipment located within or on the building? (A no answer indicates the equipment is in a separate building.)
☒ Yes ☐ No

If the space heating equipment is inside the building, where is it located?
☒ Ground Floor ☐ Basement ☐ Roof ☐ Other (specify) _____

Is the building's water heating equipment located within the building? (A no answer indicates the equipment is in a separate building.)
☒ Yes ☐ No

If the water heating equipment is inside the building, where is it located?
☒ Ground Floor ☐ Basement ☐ Other (specify) _____

Is the water heating system a central system, does it consist of multiple units, or is it a combination of the central and multiple units?
☒ Central ☐ Multiple ☐ Combination

I — 20% SAVINGS DATA

Instructions: Enter the total energy used of each fuel type for the base period and the year when there was a 20% or greater energy savings. Indicate the unit of measure. Enter the appropriate conversion factor from Appendix B to convert energy usage into Btu's. Be sure to enter the fiscal years of which the data applies. Refer to pages 7 and 15 for a complete explanation of this section.

BASE PERIOD YEAR Fiscal Year _____

ENERGY TYPE	ENERGY USAGE	CONVERSION FACTOR	BTU USAGE
Electricity			
Fuel 1			
Fuel 2			
TOTAL			

20% SAVINGS YEAR Fiscal Year _____

ENERGY TYPE	ENERGY USAGE	CONVERSION FACTOR	BTU USAGE
Electricity			
Fuel 1			
Fuel 2			
TOTAL			

J — SAVINGS ESTIMATION

Instructions: This section is to be completed by the mini-auditor after the walk-thru portion of the mini-audit. First, check the appropriate boxes which state the roughly estimated range of the percent of total electrical and fuel consumption which would be saved resulting from the implementation of all of the new mini-audit opportunities listed in section L. Secondly, calculate the range of energy and cost savings by multiplying the estimated percentages by the annual electrical and fuel consumption data on the energy report.

1

Check two boxes in each category — Not enough data (new building)

Range of Electrical Savings — ☐ 0% ☐ 5% ☐ 10% ☐ 15% ☐ 20% ☐ 25% ☐ other (specify) _____

Range of Fuel Savings — ☐ 0% ☐ 5% ☐ 10% ☐ 15% ☐ 20% ☐ 25% ☐ other (specify) _____

2

Calculate ranges of energy and cost savings —

Range of Electrical Savings

	% Range		Annual Electrical Consumption		Range of Energy Savings	% Range		Annual Electrical Dollars Spent		Range of Electrical Dollars Savings
lower bound	_____ %	x	_____ kwh	=	_____ kwh,	_____ %	x	$ _____	=	$ _____
to					to	to				to
upper bound	_____ %	x	_____ kwh	=	_____ kwh,	_____ %	x	$ _____	=	$ _____

3

Range of Fuel Savings

	% Range		Annual Fuel Consumption		Range of Fuel Savings	% Range		Annual Fuel Dollars Spent		Range of Fuel Dollars Savings
lower bound	_____ %	x	_____ Btu	=	_____ Btu,	_____ %	x	$ _____	=	$ _____
to					to	to				to
upper bound	_____ %	x	_____ Btu	=	_____ Btu,	_____ %	x	$ _____	=	$ _____

The mini-auditor is not responsible if actual savings resulting from the implementation of the energy conservation opportunities listed in section I do not fall between the roughly estimated ranges which are specified.

K

Instructions: Read through the list of energy conservation opportunities provided. As you read through the items, list below those items which have already been undertaken in your facility. The description of the past energy conservation action should contain the specific building location where the recommendation applies, if applicable. Indicate the date of implementation of each item and its classification number. Energy conserving items which have been undertaken and are not on the list provided should also be included along with their appropriate classification numbers. The classification number should be taken from the classification scheme for energy conservation opportunities listed on pages 25 through 37. *This section of the mini-audit report should be completed by building personnel prior to the walk-through by the mini-auditor.*

OPTIONAL: OPTIONAL:

ITEM NO.	CLASSIFICATION NO.		PAST ENERGY CONSERVATION ACTIONS	ENERGY SAVINGS	ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS				

Note Reproduce this page as necessary

NEW OPPORTUNITIES

Instructions: Read through the energy conservation recommendation list provided. Then walk through the building with the list. Examine the suggested maintenance and operational changes, and any other low cost energy conservation measures, that pertain to the facility. As you go along, record the item number, the classification number of the recommendation, and the new mini-audit opportunity. The description of the mini-audit opportunity should contain the specific building location where the recommendation applies, if applicable. Any recommendation not found on the list may also be included. For those other recommendations, assign an appropriate classification number from the classification scheme for energy conservation opportunities listed on pages 25 through 37. The date of implementation should only be completed as the recommendation is implemented. *This section of the mini-audit report should be completed by the mini-audit team during the building walk-through.*

ITEM NO.	CLASSIFICATION NO. MAJOR CLASS	CLASSIFICATION NO. SUB CLASS	NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS OPTIONAL:	ENERGY COST SAVINGS OPTIONAL:	DATE OF IMPLEMENTATION
1	1	1	Keep all controls free of dust.			
2	2	6	Check the insulation on the roof			
3	2	6	Insulate the roof areas.			
4	2	10	Replace single glazed windows with double glazed thermopanes.			
5	3	1	Check operation of entire heating/ cooling control system, including control valves and dampers.			
6	3	1	Check the calibration of all controllers and devices for proper settings and operations.			
7	3	1	Raise the supply air temperature for cooling to the highest point necessary to provide minimum required cooling.			
8	3	1	Lower the supply air temperature for heating to the lowest point necessary to provide minimum required heating.			
9	3	1	65°F maximum occupied, 60°F maximum unoccupied during the heating season.			
10	3	1	78°F minimum when occupied and no cooling when unoccupied during the cooling season.			
11	3	2	Clean and remove obstructions from all room air outlets and inlets (diffusers, registers and grillers). They should be kept clean and free of all dirt and foreign materials.			
12	3	3	Inspect and lubricate bearings of fans.			
13	3	3	Inspect drive belts. Adjust or replace as necessary to ensure proper operation.			
14	3	3	Inspect fans for normal operation.			
15	3	3	Make sure that all fans, frequently inoperative in unit heaters, fan coil units, and unit ventilators are running normally to increase the heat transfer rate from heating coils.			

Note 1: Date of Implementation should only be completed as the recommendation is implemented. The mini-audit report may be submitted to the Minnesota Energy Agency before the "Date of Implementation" has been completed.

Note 2 Reproduce this page as necessary.

L NEW OPPORTUNITIES

Instructions: Read through the energy conservation recommendation list provided. Then walk through the building with the list. Examine suggested maintenance and operational changes, and any other low cost energy conservation measures, that pertain to the facility. As you go along, record the item number, the classification number of the recommendation, and the new mini-audit opportunity. The description of the mini-audit opportunity should contain the specific building location where the recommendation applies, if applicable. Any recommendation not found on the list may also be included. For those other recommendations, assign an appropriate classification number from the classification scheme for energy conservation opportunities listed on pages 25 through 37. The date of implementation should only be completed as the recommendation is implemented. *This section of the mini-audit report should be completed by the mini-audit team during the building walk-through.*

ITEM NO	CLASSIFICATION NO		NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS	ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS		OPTIONAL:	OPTIONAL:	
16	3	3	Keep condenser coil face clean to permit proper air flow.			
17	3	3	Inspect ductwork for air leakage. Seal all leaks by taping or caulking.			
18	3	3	Inspect ductwork insulation.			
19	3	3	Inspect damper blades and linkages. Clean, oil and adjust.			
20	3	3	Take special note of fresh air dampers making sure that they close tightly and be sure to repair, replace or provide blade edge gaskets and gasketing at the end of blades.			
21	4	1	Instruct occupants and maintenance personnel to switch off all lights when they are not needed.			
22	4	3	Clean fixtures and lamps regularly.			
23	4	4	Use lower wattage lamps to provide the necessary illumination.			
24	4	4	Allow part of a lighting system to be turned off, while maintaining the necessary light.			
25	5	1	Keep records of the operating schedule, monthly energy consumption and purchase of any new equipment that affects energy consumption of efficiency of the building. These records will indicate the impact of energy conservation measures.			
26	5	1	Review the record books on a regular basis.			
27	6	2	All electric heating equipment should be checked for corroded elements and loose connections and repaired as required.			
28	7	3	Clean air-sides, remove soot, and scrape scale in forced warm air furnaces.			
29	7	3	If the firing rate of gas or oil burners is too high, it causes short cycling and excessive fuel consumption. Too low a rate requires constant operation and delivers inadequate heat to the spaces.			

Note 1 Date of Implementation should only be completed as the recommendation is implemented. The mini-audit report may be submitted to the Minnesota Energy Agency before the "Date of Implementation" has been completed.

Note 2 Reproduce this page as necessary.

NEW OPPORTUNITIES

Instructions: Read through the energy conservation recommendation list provided. Then walk through the building with the list. Examine suggested maintenance and operational changes, and any other low cost energy conservation measures, that pertain to the facility. As you go along record the item number, the classification number of the recommendation, and the new mini-audit opportunity. The description of the mini-audit opportunity should contain the specific building location where the recommendation applies, if applicable. Any recommendation not found on the list may also be included. For those other recommendations, assign an appropriate classification number from the classification scheme for energy conservation opportunities listed on pages 25 through 37. The date of implementation should only be completed as the recommendation is implemented. *This section of the mini-audit report should be completed by the mini-audit team during the building walk-through.*

OPTIONAL: OPTIONAL:

ITEM NO	CLASSIFICATION NO		NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS	ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS				
30	7	4	Maintain the lowest possible hot water temperature which will meet domestic hot water needs.			
31	7	4	Clean filters regularly in forced warm air units to reduce the operating time of the furnace.			
32	7	4	Turn off gas pilots for furnaces, boilers, and space heaters during the non-heating months and during long unoccupied periods.			
33	7	4	Keep all heat exchanger surfaces clean. Check air-to-fuel ratio and adjust as necessary.			
34	7	4	Inspect casing for air leaks and seal as necessary.			
35	7	4	Follow guidelines suggested for fan and motor maintenance.			

Note 1 Date of Implementation should only be completed as the recommendation is implemented. The mini-audit report may be submitted to the Minnesota Energy Agency before the "Date of Implementation" has been completed.

Note 2 Reproduce this page as necessary.

MINI-AUDIT REPORT

FORM NO. MIN-01

A — CONTACT DATA

BUILDING NAME		NAME OF ORGANIZATION		DATE
Community Ice Garden		City of Bloomington		5-27-80
BUILDING ADDRESS		**ADDRESS**		
3600 West 98th Street		2215 West Old Shakopee Road		
CITY	**ZIP CODE**	**CITY**	**ZIP CODE**	
Bloomington, MN	55431	Bloomington, MN	55431	
PERSON COMPLETING FORM	**TELEPHONE**	**CONTACT PERSON**	**TELEPHONE**	
Paul Martinsen	(612) 935-6901	Arthur Jensen	(612) 881-5811	

B — BUILDING ELIGIBILITY CODE

Instructions: For blocks 1 and 2 check the box which best fits the building ownership conditions. For block 3 determine which of the four categories describes the building type and then within the category check off the sub-category befitting the building function.

1. OWNERSHIP TYPE
   - [X] Public (PUB)
   - [ ] Non-Profit Association (NAP)

2. ULTIMATE OWNER
   - [ ] County (CNTY)
   - [X] City (CITY)
   - [ ] Township (TOWN)
   - [ ] State (STAT)
   - [ ] Public School (PUSC)
   - [ ] Private School (PRSC)
   - [ ] Non-Profit Association (NPAP)
   - [ ] Indian Tribe (INDN)

3a. SCHOOLS
   - [ ] Elementary (SCHL-ELM)
   - [ ] Secondary (SCHL-SECD)
   - [ ] Coll. or Univ. (SCHL-POST)
   - [ ] Vocational (SCHL-VOCL)
   - [ ] Education Agency (SCHL-ADMN)
   - [ ] Administration (SCHL-ADMN)
   - [ ] OTHER (SCHL-OTHR)

b. PUBLIC CARE
   - [ ] Nursing Home (PBCR-NURS)
   - [ ] Long Term Care (PBCR-TERM)
   - [ ] Rehab. Facility (PBCR-RHAB)
   - [ ] Public Health Ctr. (PBCR-HCTR)
   - [ ] Res. Child Care Ctr. (PBCR-RCCC)

c. LOCAL GOVERNMENT
   - [ ] Office (LOCG-OFFC)
   - [ ] Storage (LOCG-STRG)
   - [ ] Service (LOCG-SERV)
   - [ ] Library (LOCG-LBRY)
   - [ ] Police (LOCG-PLCE)
   - [ ] Fire (LOCG-FIRE)
   - [X] OTHER (LOCG-OTHR)

d. HOSPITALS
   - [ ] General (HOSP-GENL)
   - [ ] Tuberculosis (HOSP-TUBR)
   - [ ] OTHER (HOSP-OTHR)

C — MINI-AUDIT FUNDING REQUEST

Instructions: With reference to page 23 entitled Funding Information, determine if the facilities are eligible for both Federal and State funding or just Federal funding. then answer the questions correctly for the situation. This section must be signed and dated by the head of the organization.

If eligible for both Federal and State Funding:
Have you received a mini-audit grant before? [ ] Yes [X] No
Have you previously applied for mini-audit funding? [X] Yes [ ] No
Do you wish to apply for mini-audit funding? [ ] Yes [X] No

Date: _____

Name: _____

Signature: _____

If eligible for Federal funding only:
Have you received a mini-audit grant before? [ ] Yes [ ] No
Have you previously applied for mini-audit funding? [ ] Yes [ ] No
Do you wish to apply for mini-audit funding? [ ] Yes [ ] No
The 50% match for Federal funds will come from: (Use additional sheets if necessary.)

Date: _____

Name: _____

Signature: _____

D

ENERGY REPORT CHECK-OFF

Check the type of energy report which was completed and submitted prior to this mini-audit report.

- ☐ Elementary School Energy Report (Form No. ED-00444-02)
- ☐ Secondary School Energy Report (Form No. ED-00445-02)
- X ☐ Existing Building Energy Report (Form No. EN-00041-01)

If an energy report has not been completed previous to this mini-audit report, one must be included with this report. Elementary, secondary, and vocational schools should use form ED-00444-02 or form ED-00445-02, depending on building complexity. All other buildings should use the existing building energy report, form EN-00041-01.

E

MINI-AUDIT STATEMENTS

Instructions: This section is to be completed and signed by a registered professional engineer or by a certified mini-auditor who has successfully completed the State of Minnesota's Mini-Audit Procedures Course. This section should be completed after this mini-audit report and an energy report are completed. All blanks must be filled in.

I have reviewed the energy report and/or the energy report results for this building. I found all information contained therein to be correct *OR* I have corrected any misinformation on the energy report which will be resubmitted with this mini-audit report to the Minnesota Energy Agency.

I am not directly responsible for the day to day operations of this building being audited.

I have fully disclosed my financial interests relating to this mini-audit and any energy conservation measures considered by this audit.

I have walked through this building and have found the recommendations listed in section I of this mini-audit report to be the operations and maintenance changes, and low cost energy conservation measures, which would reduce energy consumption in this building.

I have made a rough estimate, in section G, of the range of savings which may result from the implementation of all of the mini-audit opportunities listed in section I. I am not responsible if the actual savings resulting from this mini-audit do not fall within the estimated range.

Based on actual records, the energy conservation operating and maintenance procedures listed in section K ___did not___ (did, did not) save at least 20% of the building's energy consumption as specified in section I.

Based upon my observation of the physical characteristics of this building and the building's major energy using systems, I recommend that this ___should___ (should, should not) be the subject of a maxi-audit.
I realize that this is not a final judgement, that the State reserves the right to make the maxi-audit funding determination based on this mini-audit report and other criteria.

Based upon the information in section E and the information referred to in section F, I recommend that this building ___should not___ (should, should not) undergo further solar conversion analysis, and/or ___should not___ (should, should not) undergo further analysis of the renewable resources — waste, wind, wood. (Circle proper resources)

In my judgement, as a mini-auditor, all of the above statements are true and correct.

Witnessed by:

Paul Martinsen
Mini-Auditor's Name (Print or Type)

Paul B Martinsen P.E. 9597
Signature

Rieke Carroll Muller Assoc., Inc.
Firm Name (if none, enter none)

P.O. Box 130 Hopkins, MN 55343
Address

(612) 935-6901
Phone

5-27-80
Date

Building Organizational Authority (Print or Type)

Signature

Date

F AUDIT TEAM

NAME	POSITION	ORGANIZATION
Paul Martinsen	Mechanical Engineer	Rieke Carroll Muller Assoc., Inc.
Reinert Ege	Maintenance Engineer	City of Bloomington
Andy Baltgalvis	Bldg. Maint. Chief	City of Bloomington

G BUILDING INFORMATION

BRIEF DESCRIPTION OF GENERAL BUILDING CONDITION (i.e. type, and function)
Good Condition, Ice Arena

MAJOR CHANGES PLANNED WITHIN NEXT 15 YEARS (i.e. demolition, rehabilitation, conversion from one building type to another)
None

STRUCTURAL COMPONENTS OF ROOF (i.e. metal beams, wooden rafters, concrete)
Metal Beams

ROOFING MATERIAL (i.e. tar and gravel, shingles, tile)
Tar & Gravel

H SOLAR POTENTIAL INFORMATION

INSTRUCTIONS: Correctly answer the following questions for the building being mini-audited.

Is there open land adjacent to the building?
☒ Yes ☐ No

Solar collectors need to be located in an unshaded area. Is the roof of the building and the south facing wall unshaded between the hours of 9 a.m. and 3 p.m.?
Roof: ☒ Yes ☐ No
South facing Wall: ☒ Yes ☐ No

If the roof or wall are partly shaded, what percentage of the surface is unshaded?
% of roof unshaded _____ %
% of south facing wall unshaded _____ %

What is the overall shape of the building?
☒ square ☐ rectangle ☐ H-shaped ☐ E-shaped ☐ other (specify) _____

Is the roof of the building flat or pitched?
☒ flat ☐ pitched

If pitched, what is the compass orientation of the ridgeline? _____

If pitched, what is the angle that the roof makes with horizontal? _____°

Are there large obstructions on the roof such as chimneys, rooms for mechanical equipment, ventilating units, water towers, etc?
☐ Yes ☒ No

What is the exterior facing material for the south facing wall? Concrete Block

What percentage of the south facing wall is glass? 0 %

Is the building's space heating equipment located within or on the building? (A no answer indicates the equipment is in a separate building.)
☒ Yes ☐ No

If the space heating equipment is inside the building, where is it located?
☐ Ground Floor ☐ Basement ☒ Roof ☐ Other (specify) _____

Is the building's water heating equipment located within the building? (A no answer indicates the equipment is in a separate building.)
☒ Yes ☐ No

If the water heating equipment is inside the building, where is it located?
☒ Ground Floor ☐ Basement ☐ Other (specify) _____

Is the water heating system a central system, does it consist of multiple units, or is it a combination of the central and multiple units?
☐ Central ☒ Multiple ☐ Combination

I

Instructions: Enter the total energy used of each fuel type for the base period and the year when there was a 20% or greater energy savings. Indicate the unit of measure. Enter the appropriate conversion factor from Appendix B to convert energy usage into Btu's. Be sure to enter the fiscal years of which the data applies. Refer to pages 7 and 15 for a complete explanation of this section.

20% SAVINGS DATA

BASE PERIOD YEAR — Fiscal Year _____

ENERGY TYPE	ENERGY USAGE	CONVERSION FACTOR	BTU USAGE
Electricity			
Fuel 1			
Fuel 2			
TOTAL			

20% SAVINGS YEAR — Fiscal Year _____

ENERGY TYPE	ENERGY USAGE	CONVERSION FACTOR	BTU USAGE
Electricity			
Fuel 1			
Fuel 2			
TOTAL			

J

Instructions: This section is to be completed by the mini-auditor after the walk-thru portion of the mini-audit. First, check the appropriate boxes which state the roughly estimated range of the percent of total electrical and fuel consumption which would be saved resulting from the implementation of all of the new mini-audit opportunities listed in section L. Secondly, calculate the range of energy and cost savings by multiplying the estimated percentages by the annual electrical and fuel consumption data on the energy report.

1

Check two boxes in each category —

Range of Electrical Savings — ☒ 0% ☒ 5% ☐ 10% ☐ 15% ☐ 20% ☐ 25% ☐ other (specify) _____

Range of Fuel Savings — ☐ 0% ☒ 5% ☒ 10% ☐ 15% ☐ 20% ☐ 25% ☐ other (specify) _____

2

Calculate ranges of energy and cost savings —

Range of Electrical Savings

	% Range		Annual Electrical Consumption		Range of Energy Savings	% Range		Annual Electrical Dollars Spent		Range of Electrical Dollars Savings
lower bound	0 %	x	1.3×10^6 kwh	=	0 kwh,	0 %	x	$39,126.18	=	$ 0
to upper bound	5 %	x	1.3×10^6 kwh	=	6.6×10^4 kwh,	5 %	x	$39,126.18	=	$ 1956.31

3

Range of Fuel Savings

	% Range		Annual Fuel Consumption		Range of Fuel Savings	% Range		Annual Fuel Dollars Spent		Range of Fuel Dollars Savings
lower bound	5 %	x	5.2×10^9 Btu	=	2.6×10^8 Btu,	5 %	x	$13,076.83	=	$ 653.84
to upper bound	10 %	x	5.2×10^9 Btu	=	5.2×10^8 Btu,	10 %	x	$13,076.83	=	$ 1,307.68

SAVINGS ESTIMATION

The mini-auditor is not responsible if actual savings resulting from the implementation of the energy conservation opportunities listed in section I do not fall between the roughly estimated ranges which are specified.

K

Instructions: Read through the list of energy conservation opportunities provided. As you read through the items, list below those items which have already been undertaken in your facility. The description of the past energy conservation action should contain the specific building location where the recommendation applies, if applicable. Indicate the date of implementation of each item and its classification number. Energy conserving items which have been undertaken and are not on the list provided should also be included along with their appropriate classification numbers. The classification number should be taken from the classification scheme for energy conservation opportunities listed on pages 25 through 37. *This section of the mini-audit report should be completed by building personnel prior to the walk-through by the mini-auditor.*

ITEM NO.	CLASSIFICATION NO.		PAST ENERGY CONSERVATION ACTIONS	ENERGY SAVINGS OPTIONAL:	ENERGY COST SAVINGS OPTIONAL:	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS				
1	1	1	Heat recovery added to refrigeration equipment.			Summer of '78 (Approx.)

Note: Reproduce this page as necessary

NEW OPPORTUNITIES

Instructions. Read through the energy conservation recommendation list provided. Then walk through the building with the list. Examine the suggested maintenance and operational changes, and any other low cost energy conservation measures, that pertain to the facility. As you go along, record the item number, the classification number of the recommendation, and the new mini-audit opportunity. The description of the mini-audit opportunity should contain the specific building location where the recommendation applies, if applicable. Any recommendation not found on the list may also be included. For those other recommendations, assign an appropriate classification number from the classification scheme for energy conservation opportunities listed on pages 25 through 37. The date of implementation should only be completed as the recommendation is implemented. *This section of the mini-audit report should be completed by the mini-audit team during the building walk-through.*

ITEM NO.	CLASSIFICATION NO.		NEW MINI-AUDIT OPPORTUNITIES	OPTIONAL: ENERGY SAVINGS	OPTIONAL: ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS				
1	1	1	Keep all controls free of dust.			
2	1	2	Lubricate motors to reduce wear and excessive torque.			
3	1	2	Where it is impractical to replace motors which have low loads and power factors, use capacitors at motor terminals to correct the power factor to 90%.			
4	1	3	Check power factors and make adjustments to correct equipment.			
5	2	10	Replace single glazed windows with double glazed thermopanes in lobby.			
6	3	1	Check operation of entire heating/cooling control system, including control valves and dampers.			
7	3	1	Check the calibration of all controllers and devices for proper settings and operations.			
8	3	1	Reduce the amount of infiltration and outdoor air ventilation to provide only the minimum required.			
9	3	1	Consider regulating the fresh air dampers with enthalpy control so that the building can be cooled with outdoor air when this saves energy.			
10	3	2	Clean the air side of all direct radiators, fin tube convectors and coils to enhance heat transfer.			
11	3	2	Clean and remove obstructions from all room air outlets and inlets (diffusers, registers and grillers). They should be kept clean and free of all dirt and foreign materials.			
12	3	3	Keep condenser coil face clean to permit proper air flow.			
13	3	3	Check fresh air damper control and operator for tight closing and for correct column of minimum fresh air supply as per code requirements.			
14	3	3	Inspect mixing dampers for proper operation. Adjust as necessary.			

Note 1: Date of Implementation should only be completed as the recommendation is implemented. The mini-audit report may be submitted to the Minnesota Energy Agency before the "Date of Implementation" has been completed.

Note 2: Reproduce this page as necessary.

NEW OPPORTUNITIES

Instructions: Read through the energy conservation recommendation list provided. Then walk through the building with the list. Examine the suggested maintenance and operational changes, and any other low cost energy conservation measures, that pertain to the facility. As you go along, record the item number, the classification number of the recommendation, and the new mini-audit opportunity. The description of the mini-audit opportunity should contain the specific building location where the recommendation applies, if applicable. Any recommendation not found on the list may also be included. For those other recommendations, assign an appropriate classification number from the classification scheme for energy conservation opportunities listed on pages 25 through 37. The date of implementation should only be completed as the recommendation is implemented. *This section of the mini-audit report should be completed by the mini-audit team during the building walk-through.*

ITEM NO	CLASSIFICATION NO. MAJOR CLASS	CLASSIFICATION NO. SUB CLASS	NEW MINI-AUDIT OPPORTUNITIES	OPTIONAL: ENERGY SAVINGS	OPTIONAL: ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
15	3	3	Clean or replace filters periodically or when indicated by filter gauges.			
			If there are not gauges, consider installing them.			
16	3	5	Add heat recovery from refrigeration equipment to Rink #2.			
17	3	6	Add insulation to condensing unit suction line from #2 rink east unit.			
18	4	3	Clean fixtures and lamps regularly.			
19	4	3	In dirty areas enclose fixtures to reduce dirt collection.			
20	4	3	Replace lamps in groups before they burn out to maintain higher			
			average light output per fixture.			
21	4	3	Keep walls, ceiling and floors clean.			
22	4	3	Use higher efficiency lamps for parking lot lighting.			
23	4	4	Turn off display case internal lighting, when premises are unoccupied.			
24	4	4	Remove unnecessary lamps, fixtures, and ballasts.			
25	4	4	Reduce outside lighting in parking lots and at building signs and			
			entrances to the minimum.			
26	4	4	Allow part of a lighting system to be turned off, while maintaining			
			the necessary light.			
27	4	4	Use lower wattage lamps to provide the necessary illumination.			
28	5	1	Keep records of the operating schedule, monthly energy consumption			
			and purchase of any new equipment that affects energy consumption			
			of efficiency of the building. These records will indicate the			
			impact of energy conservation measures.			
29	5	1	Review the record books on a regular basis.			
30	5	2	Establish a specific maintenance schedule for each building to			
			ensure that all components of the specific building operate at			
			maximum efficiency.			

Note 1 Date of Implementation should only be completed as the recommendation is implemented. The mini-audit report may be submitted to the Minnesota Energy Agency before the "Date of Implementation" has been completed.

Note 2 Reproduce this page as necessary

NEW OPPORTUNITIES

Instructions: Read through the energy conservation recommendation list provided. Then walk through the building with the list. Examine the suggested maintenance and operational changes, and any other low cost energy conservation measures, that pertain to the facility. As you go along, record the item number, the classification number of the recommendation, and the new mini-audit opportunity. The description of the mini-audit opportunity should contain the specific building location where the recommendation applies, if applicable. Any recommendation not found on the list may also be included. For those other recommendations, assign an appropriate classification number from the classification scheme for energy conservation opportunities listed on pages 25 through 37. The date of implementation should only be completed as the recommendation is implemented. *This section of the mini-audit report should be completed by the mini-audit team during the building walk-through.*

ITEM NO	CLASSIFICATION NO. MAJOR CLASS	CLASSIFICATION NO. SUB CLASS	NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS OPTIONAL:	ENERGY COST SAVINGS OPTIONAL:	DATE OF IMPLEMENTATION
31	5	2	Consult manufacturers literature for guidance in establishing a maintenance schedule.			
32	6	1	Adjust water supply to 100^{0}F for all except special requirements (dish-washer supply units, etc.).			
33	6	1	Check the operation of the temperature controller so overheating does not occur.			
34	6	2	Periodically drain and remove the sediment.			
35	6	5	Reduce the water flow of showers, faucets, and toilets to minimum requirements.			
36	7	3	Provide an automatic draft damper control to reduce the heat loss through the breeching (smoke pipe) when the gas burner is not in operation. Adjust draft-control with combustion testing equipment to match the firing rate.			
37	7	4	Maintain the lowest possible hot water temperature which will meet space or domestic hot water needs.			
38	7	4	Check cooling tower fan by listening for any unusual noise or vibration. Inspect condition of V-belt (s) and drive. Align fan and motor as necessary.			
39	7	4	Keep the cooling tower clean to minimize both air and water pressure drop.			
40	7	4	Determine if there is air bypass from the cooling tower outlet back to inlet.			

Note 1 Date of Implementation should only be completed as the recommendation is implemented. The mini-audit report may be submitted to the Minnesota Energy Agency before the "Date of Implementation" has been completed.

Note 2 Reproduce this page as necessary

MINI-AUDIT REPORT

FORM NO. MIN-01

A — CONTACT DATA

BUILDING NAME		NAME OF ORGANIZATION	DATE
Dwan Golf Course - Club House		City of Bloomington	5-23-80
BUILDING ADDRESS		**ADDRESS**	
3301 West 110th Street		2215 West Old Shakopee Road	
CITY	**ZIP CODE**	**CITY**	**ZIP CODE**
Bloomington, MN	55431	Bloomington, MN	55431
PERSON COMPLETING FORM	**TELEPHONE**	**CONTACT PERSON**	**TELEPHONE**
Randy Smith	(612) 935-6901	Arthur Jensen	(612) 881-5811

B — BUILDING ELIGIBILITY CODE

Instructions: For blocks 1 and 2 check the box which best fits the building ownership conditions. For block 3 determine which of the four categories describes the building type and then within the category check off the sub-category befitting the building function.

1. OWNERSHIP TYPE
   - [X] Public (PUB)
   - [ ] Non-Profit Association (NAP)

2. ULTIMATE OWNER
   - [ ] County (CNTY)
   - [X] City (CITY)
   - [ ] Township (TOWN)
   - [ ] State (STAT)
   - [ ] Public School (PUSC)
   - [ ] Private School (PRSC)
   - [ ] Non-Profit Association (NPAP)
   - [ ] Indian Tribe (INDN)

3a. SCHOOLS
   - [ ] Elementary (SCHL-ELM)
   - [ ] Secondary (SCHL-SECD)
   - [ ] Coll. or Univ. (SCHL-POST)
   - [ ] Vocational (SCHL-VOCL)
   - [ ] Education Agency (SCHL-ADMN)
   - [ ] Administration (SCHL-ADMN)
   - [ ] OTHER (SCHL-OTHR)

b. PUBLIC CARE
   - [ ] Nursing Home (PBCR-NURS)
   - [ ] Long Term Care (PBCR-TERM)
   - [ ] Rehab. Facility (PBCR-RHAB)
   - [ ] Public Health Ctr. (PBCR-HCTR)
   - [ ] Res. Child Care Ctr. (PBCR-RCCC)

c. LOCAL GOVERNMENT
   - [ ] Office (LOCG-OFFC)
   - [ ] Storage (LOCG-STRG)
   - [ ] Service (LOCG-SERV)
   - [ ] Library (LOCG-LBRY)
   - [ ] Police (LOCG-PLCE)
   - [ ] Fire (LOCG-FIRE)
   - [X] OTHER (LOCG-OTHR)

d. HOSPITALS
   - [ ] General (HOSP-GENL)
   - [ ] Tuberculosis (HOSP-TUBR)
   - [ ] OTHER (HOSP-OTHR)

C — MINI-AUDIT FUNDING REQUEST

Instructions: With reference to page 23 entitled Funding Information, determine if the facilities are eligible for both Federal and State funding or just Federal funding. then answer the questions correctly for the situation. This section must be signed and dated by the head of the organization.

If eligible for both Federal and State Funding:
- Have you received a mini-audit grant before? [ ] Yes [X] No
- Have you previously applied for mini-audit funding? [X] Yes [ ] No
- Do you wish to apply for mini-audit funding? [ ] Yes [X] No

Date: _____

Name: _____

Signature: _____

If eligible for Federal funding only:
- Have you received a mini-audit grant before? [ ] Yes [ ] No
- Have you previously applied for mini-audit funding? [ ] Yes [ ] No
- Do you wish to apply for mini-audit funding? [ ] Yes [ ] No
- The 50% match for Federal funds will come from: (Use additional sheets if necessary.)

Date: _____

Name: _____

Signature: _____

D ENERGY REPORT CHECK-OFF

Check the type of energy report which was completed and submitted prior to this mini-audit report.

- ☐ Elementary School Energy Report (Form No. ED-00444-02)
- ☐ Secondary School Energy Report (Form No. ED-00445-02)
- XX ☒ Existing Building Energy Report (Form No. EN-00041-01)

If an energy report has not been completed previous to this mini-audit report, one must be included with this report. Elementary, secondary, and vocational schools should use form ED-00444-02 or form ED-00445-02, depending on building complexity. All other buildings should use the existing building energy report, form EN-00041-01.

E MINI-AUDIT STATEMENTS

Instructions: This section is to be completed and signed by a registered professional engineer or by a certified mini-auditor who has successfully completed the State of Minnesota's Mini-Audit Procedures Course. This section should be completed after this mini-audit report and an energy report are completed. All blanks must be filled in.

I have reviewed the energy report and/or the energy report results for this building. I found all information contained therein to be correct *OR* I have corrected any misinformation on the energy report which will be resubmitted with this mini-audit report to the Minnesota Energy Agency.

I am not directly responsible for the day to day operations of this building being audited.

I have fully disclosed my financial interests relating to this mini-audit and any energy conservation measures considered by this audit.

I have walked through this building and have found the recommendations listed in section I of this mini-audit report to be the operations and maintenance changes, and low cost energy conservation measures, which would reduce energy consumption in this building.

I have made a rough estimate, in section G, of the range of savings which may result from the implementation of all of the mini-audit opportunities listed in section I. I am not responsible if the actual savings resulting from this mini-audit do not fall within the estimated range.

Based on actual records, the energy conservation operating and maintenance procedures listed in section K ___did not___ (did, did not) save at least 20% of the building's energy consumption as specified in section I.

Based upon my observation of the physical characteristics of this building and the building's major energy using systems, I recommend that this ___should not___ (should, should not) be the subject of a maxi-audit.
I realize that this is not a final judgement, that the State reserves the right to make the maxi-audit funding determination based on this mini-audit report and other criteria.

Based upon the information in section E and the information referred to in section F, I recommend that this building ___should not___ (should, should not) undergo further solar conversion analysis, and/or ___should not___ (should, should not) undergo further analysis of the renewable resources — waste, wind, wood. (Circle proper resources)

In my judgement, as a mini-auditor, all of the above statements are true and correct.

Witnessed by:

Randy Smith
Mini-Auditor's Name (Print or Type)

Randy Smith 206
Signature

Rieke Carroll Muller Assoc., Inc.
Firm Name (if none, enter none)

P.O. Box 130 Hopkins, MN 55343
Address

(612) 935-6901
Phone

5-23-80
Date

Building Organizational Authority (Print or Type)

Signature

Date

F AUDIT TEAM

NAME	POSITION	ORGANIZATION
Randy Smith	Certified Mini-Auditor	Rieke Carroll Muller Assoc., Inc.
Reinert Ege	Maintenance Engineer	City of Bloomington

G BUILDING INFORMATION

BRIEF DESCRIPTION OF GENERAL BUILDING CONDITION (i.e. type, and function)
Good, Clubhouse, Dining

MAJOR CHANGES PLANNED WITHIN NEXT 15 YEARS (i.e. demolition, rehabilitation, conversion from one building type to another)
None

STRUCTURAL COMPONENTS OF ROOF (i.e. metal beams, wooden rafters, concrete)
Wooden Rafters

ROOFING MATERIAL (i.e. tar and gravel, shingles, tile)
Tar and Gravel

H SOLAR POTENTIAL INFORMATION

INSTRUCTIONS: Correctly answer the following questions for the building being mini-audited.

Is there open land adjacent to the building?
☒ Yes ☐ No

Solar collectors need to be located in an unshaded area. Is the roof of the building and the south facing wall unshaded between the hours of 9 a.m. and 3 p.m.?
Roof: ☒ Yes ☐ No
South facing Wall: ☒ Yes ☐ No

If the roof or wall are partly shaded, what percentage of the surface is unshaded?
% of roof unshaded _____ %
% of south facing wall unshaded _____ %

What is the overall shape of the building?
☐ square ☒ rectangle ☐ H-shaped ☐ E-shaped ☐ other (specify) _____

Is the roof of the building flat or pitched?
☒ flat ☐ pitched

If pitched, what is the compass orientation of the ridgeline? _____

If pitched, what is the angle that the roof makes with horizontal? _____°

Are there large obstructions on the roof such as chimneys, rooms for mechanical equipment, ventilating units, water towers, etc?
☐ Yes ☒ No

What is the exterior facing material for the south facing wall? Wood Siding

What percentage of the south facing wall is glass? 60 %

Is the building's space heating equipment located within or on the building? (A no answer indicates the equipment is in a separate building.)
☒ Yes ☐ No

If the space heating equipment is inside the building, where is it located?
☒ Ground Floor ☐ Basement ☐ Roof ☐ Other (specify) _____

Is the building's water heating equipment located within the building? (A no answer indicates the equipment is in a separate building.)
☒ Yes ☐ No

If the water heating equipment is inside the building, where is it located?
☒ Ground Floor ☐ Basement ☐ Other (specify) _____

Is the water heating system a central system, does it consist of multiple units, or is it a combination of the central and multiple units?
☒ Central ☐ Multiple ☐ Combination

I — 20% SAVINGS DATA

Instructions: Enter the total energy used of each fuel type for the base period and the year when there was a 20% or greater energy savings. Indicate the unit of measure. Enter the appropriate conversion factor from Appendix B to convert energy usage into Btu's. Be sure to enter the fiscal years of which the data applies. Refer to pages 7 and 15 for a complete explanation of this section.

BASE PERIOD YEAR — Fiscal Year _____

ENERGY TYPE	ENERGY USAGE	CONVERSION FACTOR	BTU USAGE
Electricity			
Fuel 1			
Fuel 2			
TOTAL			

20% SAVINGS YEAR — Fiscal Year _____

ENERGY TYPE	ENERGY USAGE	CONVERSION FACTOR	BTU USAGE
Electricity			
Fuel 1			
Fuel 2			
TOTAL			

J — SAVINGS ESTIMATION

Instructions: This section is to be completed by the mini-auditor after the walk-thru portion of the mini-audit. First, check the appropriate boxes which state the roughly estimated range of the percent of total electrical and fuel consumption which would be saved resulting from the implementation of all of the new mini-audit opportunities listed in section L. Secondly, calculate the range of energy and cost savings by multiplying the estimated percentages by the annual electrical and fuel consumption data on the energy report.

1

Check two boxes in each category —

Range of Electrical Savings — ☒ 0% ☒ 5% ☐ 10% ☐ 15% ☐ 20% ☐ 25% ☐ other (specify) _____

Range of Fuel Savings — ☐ 0% ☒ 5% ☒ 10% ☐ 15% ☐ 20% ☐ 25% ☐ other (specify) _____

2

Calculate ranges of energy and cost savings —

Range of Electrical Savings

	% Range		Annual Electrical Consumption		Range of Energy Savings	% Range		Annual Electrical Dollars Spent		Range of Electrical Dollars Savings
lower bound	0 %	x	63237 kwh	=	0 kwh,	0 %	x	$ 2451.17	=	$ 0
to upper bound	5 %	x	63236 kwh	=	3161.8 kwh,	5 %	x	$ 2451.17	=	$ 122.59

3

Range of Fuel Savings

	% Range		Annual Fuel Consumption		Range of Fuel Savings	% Range		Annual Fuel Dollars Spent		Range of Fuel Dollars Savings
lower bound	5 %	x	33.0×10^6 Btu	=	16.5×10^5 Btu,	5 %	x	$ 747.52	=	$ 37.38
to upper bound	10 %	x	33.0×10^6 Btu	=	33.0×10^5 Btu,	10 %	x	$ 747.52	=	$ 74.75

The mini-auditor is not responsible if actual savings resulting from the implementation of the energy conservation opportunities listed in section I do not fall between the roughly estimated ranges which are specified.

K

Instructions: Read through the list of energy conservation opportunities provided. As you read through the items, list below those items which have already been undertaken in your facility. The description of the past energy conservation action should contain the specific building location where the recommendation applies, if applicable. Indicate the date of implementation of each item and its classification number. Energy conserving items which have been undertaken and are not on the list provided should also be included along with their appropriate classification numbers. The classification number should be taken from the classification scheme for energy conservation opportunities listed on pages 25 through 37. *This section of the mini-audit report should be completed by building personnel prior to the walk-through by the mini-auditor.*

ITEM NO.	CLASSIFICATION NO.		PAST ENERGY CONSERVATION ACTIONS	OPTIONAL: ENERGY SAVINGS	OPTIONAL: ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS				

Note: Reproduce this page as necessary

NEW OPPORTUNITIES

Instructions: Read through the energy conservation recommendation list provided. Then walk through the building with the list. Examine the suggested maintenance and operational changes, and any other low cost energy conservation measures, that pertain to the facility. As you go along, record the item number, the classification number of the recommendation, and the new mini-audit opportunity. The description of the mini-audit opportunity should contain the specific building location where the recommendation applies, if applicable. Any recommendation not found on the list may also be included. For those other recommendations, assign an appropriate classification number from the classification scheme for energy conservation opportunities listed on pages 25 through 37. The date of implementation should only be completed as the recommendation is implemented. *This section of the mini-audit report should be completed by the mini-audit team during the building walk-through.*

ITEM NO.	CLASSIFICATION NO. MAJOR CLASS	CLASSIFICATION NO. SUB CLASS	NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS OPTIONAL:	ENERGY COST SAVINGS OPTIONAL:	DATE OF IMPLEMENTATION
1	1	1	Keep all controls free of dust.			
2	2	1	Check the amount of insulation in the ceiling.			
3	2	1	Add insultation above suspended ceilings if needed.			
4	2	2	Weatherstrip all exterior doors.			
5	2	2	Replace an existing door with one of a higher R-value.			
6	2	3	Add or modify window drapes, blinds and shutters to resist temperature difference.			
7	2	3	Plant deciduous trees for summer shading.			
8	2	3	South and west facing windows should be fitted with solar shading devices			
			(i.e. overhangs- fins, trellises, awnings, interior drapes) to reduce			
			heat gain.			
9	2	10	Replace single glazed windows with double glazed thermopanes.			
10	3	1	Check operation of entire heating/ cooling control system, including			
			control valves and dampers.			
11	3	1	Check the calibration of all con- trollers and devices for proper			
			settings and operations.			
12	3	1	Raise the supply air temperature for cooling to the highest point			
			necessary to provide minimum required cooling.			
13	3	1	Lower the supply air temperature for heating to the lowest point			
			necessary to provide minimum required heating.			
14	3	1	65°F maximum occupied, 60°F maximum unoccupied during the heating season.			
15	3	1	78°F minimum when occupied and no cooling when unoccupied during the			
			cooling season.			
16	3	2	Clean and remove obstructions from all room air outlets and inlets			
			(diffusers, registers, and grillers). They should be kept clean and free			
			of all dirt and foreign materials.			

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Note 2: Reproduce this page as necessary.

NEW OPPORTUNITIES

Instructions: Read through the energy conservation recommendation list provided. Then walk through the building with the list. Examine the suggested maintenance and operational changes, and any other low cost energy conservation measures, that pertain to the facility. As you go along, record the item number, the classification number of the recommendation, and the new mini-audit opportunity. The description of the mini-audit opportunity should contain the specific building location where the recommendation applies, if applicable. Any recommendation not found on the list may also be included. For those other recommendations, assign an appropriate classification number from the classification scheme for energy conservation opportunities listed on pages 25 through 37. The date of implementation should only be completed as the recommendation is implemented. *This section of the mini-audit report should be completed by the mini-audit team during the building walk-through.*

OPTIONAL: OPTIONAL:

ITEM NO	CLASSIFICATION NO. MAJOR CLASS	CLASSIFICATION NO. SUB CLASS	NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS	ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
17	3	3	Inspect fans for normal operation.			
18	3	3	Keep condenser coil face clean to permit proper air flow.			
19	3	3	Inspect ductwork for air leakage. Seal all leaks by taping or caulking.			
20	3	3	Inspect ductwork insulation.			
21	3	3	Inspect damper blades and linkages. Clean, oil and adjust.			
22	3	3	Take special note of fresh air dampers making sure that they close			
			tightly and be sure to repair, replace or provide blade edge gaskets			
			and gasketing at the end of blades.			
23	3	3	Clean or replace filters periodically.			
24	4	1	Instruct occupants and maintenance personnel to switch off all lights			
			when they are not needed.			
25	4	3	Clean fixtures and lamps regularly.			
26	4	4	Use lower wattage lamps to provide the necessary illumination.			
27	4	4	Allow part of a lighting system to be turned off, while maintaining			
			the necessary light.			
28	5	1	Keep records of the operating schedule, monthly energy consumption			
			of efficiency of the building. These records will indicate the impact			
			of energy conservation measures.			
29	5	1	Review the record books on a regular basis.			
30	6	2	The burner system of fossil-fuel water heaters should be kept clean			
			and in good operating condition.			
31	7	3	Clean air-sides, remove soot, and scrape scale in forced warm air			
			furnaces.			
32	7	3	If the firing rate of gas or oil burners is too high, it causes			
			short cycling and excessive fuel consumption. Too low a rate requires			

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Note 2: Reproduce this page as necessary.

NEW OPPORTUNITIES

Instructions Read through the energy conservation recommendation list provided. Then walk through the building with the list. Examine the suggested maintenance and operational changes, and any other low cost energy conservation measures, that pertain to the facility. As you go along, record the item number, the classification number of the recommendation, and the new mini-audit opportunity. The description of the mini-audit opportunity should contain the specific building location where the recommendation applies, if applicable. Any recommendation not found on the list may also be included. For those other recommendations, assign an appropriate classification number from the classification scheme for energy conservation opportunities listed on pages 25 through 37. The date of implementation should only be completed as the recommendation is implemented. *This section of the mini-audit report should be completed by the mini-audit team during the building walk-through.*

ITEM NO.	CLASSIFICATION NO. MAJOR CLASS	CLASSIFICATION NO. SUB CLASS	NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS OPTIONAL:	ENERGY COST SAVINGS OPTIONAL:	DATE OF IMPLEMENTATION
			constant operating and delivers inadequate heat to the spaces.			
33	7	4	Maintain the lowest possible hot water temperature which will meet domestic hot water needs.			
34	7	4	Turn off gas pilots for furnaces, boilers, and space heaters during the non-heating months and during long unoccupied periods.			

Note 1. Date of Implementation should only be completed as the recommendation is implemented. The mini-audit report may be submitted to the Minnesota Energy Agency before the "Date of Implementation" has been completed.

Note 2 Reproduce this page as necessary.

MINI-AUDIT REPORT

FORM NO. MIN-01

A — CONTACT DATA

BUILDING NAME		NAME OF ORGANIZATION	DATE
Dwan Golf Course Maintenance Building		City of Bloomington	5-23-80
BUILDING ADDRESS		**ADDRESS**	
3651 West 110th Street		2215 West Old Shakopee Road	
CITY	**ZIP CODE**	**CITY**	**ZIP CODE**
Bloomington, MN	55431	Bloomington, MN	55431
PERSON COMPLETING FORM	**TELEPHONE**	**CONTACT PERSON**	**TELEPHONE**
Randy Smith	(612) 935-6901	Arthur Jensen	(612) 881-5811

B — BUILDING ELIGIBILITY CODE

Instructions: For blocks 1 and 2 check the box which best fits the building ownership conditions. For block 3 determine which of the four categories describes the building type and then within the category check off the sub category befitting the building function.

1. OWNERSHIP TYPE
   - [X] Public (PUB)
   - [ ] Non-Profit Association (NAP)

2. ULTIMATE OWNER
   - [ ] County (CNTY)
   - [X] City (CITY)
   - [ ] Township (TOWN)
   - [ ] State (STAT)
   - [ ] Public School (PUSC)
   - [ ] Private School (PRSC)
   - [ ] Non-Profit Association (NPAP)
   - [ ] Indian Tribe (INDN)

3a. SCHOOLS
   - [ ] Elementary (SCHL-ELM)
   - [ ] Secondary (SCHL-SECD)
   - [ ] Coll. or Univ. (SCHL-POST)
   - [ ] Vocational (SCHL-VOCL)
   - [ ] Education Agency (SCHL-ADMN)
   - [ ] Administration (SCHL-ADMN)
   - [ ] OTHER (SCHL-OTHR)

b. PUBLIC CARE
   - [ ] Nursing Home (PBCR-NURS)
   - [ ] Long Term Care (PBCR-TERM)
   - [ ] Rehab. Facility (PBCR-RHAB)
   - [ ] Public Health Ctr. (PBCR-HCTR)
   - [ ] Res. Child Care Ctr. (PBCR-RCCC)

c. LOCAL GOVERNMENT
   - [ ] Office (LOCG-OFFC)
   - [ ] Storage (LOCG-STRG)
   - [ ] Service (LOCG-SERV)
   - [ ] Library (LOCG-LBRY)
   - [ ] Police (LOCG-PLCE)
   - [ ] Fire (LOCG-FIRE)
   - [X] OTHER (LOCG-OTHR)

d. HOSPITALS
   - [ ] General (HOSP-GENL)
   - [ ] Tuberculosis (HOSP-TUBR)
   - [ ] OTHER (HOSP-OTHR)

C — MINI-AUDIT FUNDING REQUEST

Instructions: With reference to page 23 entitled Funding Information, determine if the facilities are eligible for both Federal and State funding or just Federal funding. then answer the questions correctly for the situation. This section must be signed and dated by the head of the organization.

If eligible for both Federal and State Funding:
Have you received a mini-audit grant before? [ ] Yes [X] No
Have you previously applied for mini-audit funding? [X] Yes [ ] No
Do you wish to apply for mini-audit funding? [ ] Yes [X] No

Date: _____

Name: _____

Signature: _____

If eligible for Federal funding only:
Have you received a mini-audit grant before? [ ] Yes [ ] No
Have you previously applied for mini-audit funding? [ ] Yes [ ] No
Do you wish to apply for mini-audit funding? [ ] Yes [ ] No
The 50% match for Federal funds will come from: (Use additional sheets if necessary.)

Date: _____

Name: _____

Signature: _____

D ENERGY REPORT CHECK-OFF

Check the type of energy report which was completed and submitted prior to this mini-audit report.

☐ Elementary School Energy Report (Form No. ED-00444-02)
☐ Secondary School Energy Report (Form No. ED-00445-02)
☒ Existing Building Energy Report (Form No. EN-00041-01)

If an energy report has not been completed previous to this mini-audit report, one must be included with this report. Elementary, secondary, and vocational schools should use form ED-00444-02 or form ED-00445-02, depending on building complexity. All other buildings should use the existing building energy report, form EN-00041-01.

E MINI-AUDIT STATEMENTS

Instructions: This section is to be completed and signed by a registered professional engineer or by a certified mini-auditor who has successfully completed the State of Minnesota's Mini-Audit Procedures Course. This section should be completed after this mini-audit report and an energy report are completed. All blanks must be filled in.

I have reviewed the energy report and/or the energy report results for this building. I found all information contained therein to be correct *OR* I have corrected any misinformation on the energy report which will be resubmitted with this mini-audit report to the Minnesota Energy Agency.

I am not directly responsible for the day to day operations of this building being audited.

I have fully disclosed my financial interests relating to this mini-audit and any energy conservation measures considered by this audit.

I have walked through this building and have found the recommendations listed in section I of this mini-audit report to be the operations and maintenance changes, and low cost energy conservation measures, which would reduce energy consumption in this building.

I have made a rough estimate, in section G, of the range of savings which may result from the implementation of all of the mini-audit opportunities listed in section I. I am not responsible if the actual savings resulting from this mini-audit do not fall within the estimated range.

Based on actual records, the energy conservation operating and maintenance procedures listed in section K did not (did, did not) save at least 20% of the building's energy consumption as specified in section I.

Based upon my observation of the physical characteristics of this building and the building's major energy using systems, I recommend that this should not (should, should not) be the subject of a maxi-audit.
I realize that this is not a final judgement, that the State reserves the right to make the maxi-audit funding determination based on this mini-audit report and other criteria.

Based upon the information in section E and the information referred to in section F, I recommend that this building should not (should, should not) undergo further solar conversion analysis, and/or should not (should, should not) undergo further analysis of the renewable resources — waste, wind, wood. (Circle proper resources)

In my judgement, as a mini-auditor, all of the above statements are true and correct.

Witnessed by:

Randy Smith
Mini-Auditor's Name (Print or Type)

Randy Smith 206
Signature

Rieke Carroll Muller Assoc., Inc.
Firm Name (if none, enter none)

P.O. Box 130 Hopkins, MN 55343
Address

(612) 935-6901
Phone

5-23-80
Date

Building Organizational Authority (Print or Type)

Signature

Date

F AUDIT TEAM

NAME	POSITION	ORGANIZATION
Randy Smith	Certified Mini-Auditor	Rieke Carroll Muller Assoc., Inc.
Reinert Ege	Maintenance Engineer	City of Bloomington

G BUILDING INFORMATION

BRIEF DESCRIPTION OF GENERAL BUILDING CONDITION (i.e. type, and function)
Good, Repair and Storage

MAJOR CHANGES PLANNED WITHIN NEXT 15 YEARS (i.e. demolition, rehabilitation, conversion from one building type to another)
None

STRUCTURAL COMPONENTS OF ROOF (i.e. metal beams, wooden rafters, concrete)
Wooden Rafters

ROOFING MATERIAL (i.e. tar and gravel, shingles, tile)
Tar and Gravel

H SOLAR POTENTIAL INFORMATION

INSTRUCTIONS: Correctly answer the following questions for the building being mini-audited.

Is there open land adjacent to the building?
☒ Yes ☐ No

Solar collectors need to be located in an unshaded area. Is the roof of the building and the south facing wall unshaded between the hours of 9 a.m. and 3 p.m.?
Roof: ☒ Yes ☐ No
South facing Wall: ☒ Yes ☐ No

If the roof or wall are partly shaded, what percentage of the surface is unshaded?
% of roof unshaded _____ %
% of south facing wall unshaded _____ %

What is the overall shape of the building?
☐ square ☒ rectangle ☐ H-shaped ☐ E-shaped ☐ other (specify) _____

Is the roof of the building flat or pitched?
☒ flat ☐ pitched

If pitched, what is the compass orientation of the ridgeline? _____

If pitched, what is the angle that the roof makes with horizontal? _____°

Are there large obstructions on the roof such as chimneys, rooms for mechanical equipment, ventilating units, water towers, etc?
☐ Yes ☒ No

What is the exterior facing material for the south facing wall? Wood siding

What percentage of the south facing wall is glass? 5 %

Is the building's space heating equipment located within or on the building? (A no answer indicates the equipment is in a separate building.)
☒ Yes ☐ No

If the space heating equipment is inside the building, where is it located?
☒ Ground Floor ☐ Basement ☐ Roof ☐ Other (specify) _____

Is the building's water heating equipment located within the building? (A no answer indicates the equipment is in a separate building.)
☒ Yes ☐ No

If the water heating equipment is inside the building, where is it located?
☒ Ground Floor ☐ Basement ☐ Other (specify) _____

Is the water heating system a central system, does it consist of multiple units, or is it a combination of the central and multiple units?
☒ Central ☐ Multiple ☐ Combination

I — 20% SAVINGS DATA

Instructions: Enter the total energy used of each fuel type for the base period and the year when there was a 20% or greater energy savings. Indicate the unit of measure. Enter the appropriate conversion factor from Appendix B to convert energy usage into Btu's. Be sure to enter the fiscal years of which the data applies. Refer to pages 7 and 15 for a complete explanation of this section.

BASE PERIOD YEAR — Fiscal Year _____

ENERGY TYPE	ENERGY USAGE	CONVERSION FACTOR	BTU USAGE
Electricity			
Fuel 1			
Fuel 2			
TOTAL			

20% SAVINGS YEAR — Fiscal Year _____

ENERGY TYPE	ENERGY USAGE	CONVERSION FACTOR	BTU USAGE
Electricity			
Fuel 1			
Fuel 2			
TOTAL			

J — SAVINGS ESTIMATION

Instructions: This section is to be completed by the mini-auditor after the walk-thru portion of the mini-audit. First, check the appropriate boxes which state the roughly estimated range of the percent of total electrical and fuel consumption which would be saved resulting from the implementation of all of the new mini-audit opportunities listed in section L. Secondly, calculate the range of energy and cost savings by multiplying the estimated percentages by the annual electrical and fuel consumption data on the energy report.

1

Check two boxes in each category —

Range of Electrical Savings — ☒ 0% ☒ 5% ☐ 10% ☐ 15% ☐ 20% ☐ 25% ☐ other (specify) _____

Range of Fuel Savings — ☐ 0% ☒ 5% ☒ 10% ☐ 15% ☐ 20% ☐ 25% ☐ other (specify) _____

2

Calculate ranges of energy and cost savings —

Range of Electrical Savings

	% Range		Annual Electrical Consumption		Range of Energy Savings	% Range		Annual Electrical Dollars Spent		Range of Electrical Dollars Savings
lower bound	0 %	x	22988 kwh	=	0 kwh,	0 %	x	$ 1004.85	=	$ 0
to upper bound	5 %	x	22988 kwh	=	1149.4 kwh,	5 %	x	$ 1004.85	=	$ 50.24

3

Range of Fuel Savings

	% Range		Annual Fuel Consumption		Range of Fuel Savings	% Range		Annual Fuel Dollars Spent		Range of Fuel Dollars Savings
lower bound	5 %	x	51.6×10^6 Btu	=	25.9×10^5 Btu,	5 %	x	$ 1181.40	=	$ 59.07
to upper bound	10 %	x	51.6×10^6 Btu	=	51.6×10^5 Btu,	10 %	x	$ 1181.40	=	$ 118.14

The mini-auditor is not responsible if actual savings resulting from the implementation of the energy conservation opportunities listed in section I do not fall between the roughly estimated ranges which are specified.

K

Instructions: Read through the list of energy conservation opportunities provided. As you read through the items, list below those items which have already been undertaken in your facility. The description of the past energy conservation action should contain the specific building location where the recommendation applies, if applicable. Indicate the date of implementation of each item and its classification number. Energy conserving items which have been undertaken and are not on the list provided should also be included along with their appropriate classification numbers. The classification number should be taken from the classification scheme for energy conservation opportunities listed on pages 25 through 37. *This section of the mini-audit report should be completed by building personnel prior to the walk-through by the mini-auditor.*

ITEM NO.	CLASSIFICATION NO.		PAST ENERGY CONSERVATION ACTIONS	OPTIONAL: ENERGY SAVINGS	OPTIONAL: ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS				

Note: Reproduce this page as necessary

NEW OPPORTUNITIES

Instructions: Read through the energy conservation recommendation list provided. Then walk through the building with the list. Examine the suggested maintenance and operational changes, and any other low cost energy conservation measures, that pertain to the facility. As you go along, record the item number, the classification number of the recommendation, and the new mini-audit opportunity. The description of the mini-audit opportunity should contain the specific building location where the recommendation applies, if applicable. Any recommendation not found on the list may also be included. For those other recommendations, assign an appropriate classification number from the classification scheme for energy conservation opportunities listed on pages 25 through 37. The date of implementation should only be completed as the recommendation is implemented. *This section of the mini-audit report should be completed by the mini-audit team during the building walk-through.*

ITEM NO	CLASSIFICATION NO. MAJOR CLASS	CLASSIFICATION NO. SUB CLASS	NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS OPTIONAL:	ENERGY COST SAVINGS OPTIONAL:	DATE OF IMPLEMENTATION
1	1	1	Keep all controls free of dust.			
2	2	1	Check the amount of insulation in the ceiling.			
3	2	1	Add insulation in attic spaces if needed.			
4	2	2	Weatherstrip all exterior doors including garage or delivery doors.			
5	2	2	Replace an existing door with one of a higher R-value.			
6	2	8	Insulate walls with rigid insulation on inside surfaces, or place loose fill insulation in wall cavaties.			
7	2	10	Inspect window closing and locking devices to insure a tight window.			
8	2	10	Replace single glazed windows with double glazed thermopanes.			
9	3	1	Check the calibration of all controllers and devices for proper settings and operations.			
10	3	1	Lower the supply air temperature for heating to the lowest point necessary to provide minimum required heating.			
11	3	1	65°F maximum occupied, 60°F maximum unoccupied during the heating season.			
12	3	2	Clean and remove obstructions from all room air outlets and inlets (diffusers, registers and grillers). They should be kept clean and free of all dirt and foreign materials.			
13	3	3	Inspect and lubricate bearings of fans.			
14	3	3	Inspect fans for normal operation.			
15	3	3	Inspect ductwork for air leakage. Seal all leaks by taping or caulking.			
16	3	3	Inspect ductwork insulation.			
17	3	3	Clean or replace filters periodically.			
18	4	1	Instruct occupants and maintenance personnel to switch off all lights when they are not needed.			

Note 1: Date of Implementation should only be completed as the recommendation is implemented. The mini-audit report may be submitted to the Minnesota Energy Agency before the "Date of Implementation" has been completed.

Note 2: Reproduce this page as necessary.

NEW OPPORTUNITIES

Instructions: Read through the energy conservation recommendation list provided. Then walk through the building with the list. Examine the suggested maintenance and operational changes, and any other low cost energy conservation measures, that pertain to the facility. As you go along, record the item number, the classification number of the recommendation, and the new mini-audit opportunity. The description of the mini-audit opportunity should contain the specific building location where the recommendation applies, if applicable. Any recommendation not found on the list may also be included. For those other recommendations, assign an appropriate classification number from the classification scheme for energy conservation opportunities listed on pages 25 through 37. The date of implementation should only be completed as the recommendation is implemented. *This section of the mini-audit report should be completed by the mini-audit team during the building walk-through.*

ITEM NO.	CLASSIFICATION NO.		NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS	ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS		OPTIONAL:	OPTIONAL:	
19	4	2	Clean windows.			
20	4	3	Clean fixtures and lamps regularly.			
21	4	4	Use lower wattage lamps to provide the necessary illumination.			
22	4	4	Allow part of a lighting system to be turned off, while maintaining the necessary light.			
23	5	1	Keep records of the operating schedule, monthly energy consumption and purchase of any new equipment that affects energy consumption of efficiency of the building. These records will indicate the impact of energy conservation measures.			
24	5	1	Review the record books on a regular basis.			
25	6	2	The burner system of fossil-fuel water heaters should be kept clean and in good operating condition.			
26	7	3	Clean air-sides, remove soot, and scrape scale in forced warm air furnaces.			
27	7	4	Maintain the lowest possible hot water temperature which will meet domestic hot water needs.			
28	7	4	Turn off gas pilots for furnaces, boilers, and space heaters during the non-heating months and during long unoccupied periods.			
29	7	4	Keep all heat exchanger surfaces clean. Check air-to-fuel ratio and adjust as necessary.			
30	7	4	Follow guidelines suggested for fan and motor maintenance.			

Note 1. Date of Implementation should only be completed as the recommendation is implemented. The mini-audit report may be submitted to the Minnesota Energy Agency before the "Date of Implementation" has been completed.

Note 2: Reproduce this page as necessary.

MINI-AUDIT REPORT

FORM NO. MIN-01

A — CONTACT DATA

BUILDING NAME		NAME OF ORGANIZATION	DATE
Hyland Greens Golf Course-Club House		City of Bloomington	5-23-80
BUILDING ADDRESS		**ADDRESS**	
10100 Normandale Boulevard		2215 West Old Shakopee Road	
CITY	**ZIP CODE**	**CITY**	**ZIP CODE**
Bloomington, MN	55437	Bloomington, MN	55431
PERSON COMPLETING FORM	**TELEPHONE**	**CONTACT PERSON**	**TELEPHONE**
Randy Smith	(612) 935-6901	Arthur Jensen	(612) 881-5811

B — BUILDING ELIGIBILITY CODE

Instructions: For blocks 1 and 2 check the box which best fits the building ownership conditions. For block 3 determine which of the four categories describes the building type and then within the category check off the sub category befitting the building function.

1. OWNERSHIP TYPE
   - [X] Public (PUB)
   - [ ] Non-Profit Association (NAP)

2. ULTIMATE OWNER
   - [ ] County (CNTY)
   - [X] City (CITY)
   - [ ] Township (TOWN)
   - [ ] State (STAT)
   - [ ] Public School (PUSC)
   - [ ] Private School (PRSC)
   - [ ] Non-Profit Association (NPAP)
   - [ ] Indian Tribe (INDN)

3a. SCHOOLS
   - [ ] Elementary (SCHL-ELM)
   - [ ] Secondary (SCHL-SECD)
   - [ ] Coll. or Univ. (SCHL-POST)
   - [ ] Vocational (SCHL-VOCL)
   - [ ] Education Agency (SCHL-ADMN)
   - [ ] Administration (SCHL-ADMN)
   - [ ] OTHER (SCHL-OTHR)

b. PUBLIC CARE
   - [ ] Nursing Home (PBCR-NURS)
   - [ ] Long Term Care (PBCR-TERM)
   - [ ] Rehab. Facility (PBCR-RHAB)
   - [ ] Public Health Ctr. (PBCR-HCTR)
   - [ ] Res. Child Care Ctr. (PBCR-RCCC)

c. LOCAL GOVERNMENT
   - [ ] Office (LOCG-OFFC)
   - [ ] Storage (LOCG-STRG)
   - [ ] Service (LOCG-SERV)
   - [ ] Library (LOCG-LBRY)
   - [ ] Police (LOCG-PLCE)
   - [ ] Fire (LOCG-FIRE)
   - [X] OTHER (LOCG-OTHR)

d. HOSPITALS
   - [ ] General (HOSP-GENL)
   - [ ] Tuberculosis (HOSP-TUBR)
   - [ ] OTHER (HOSP-OTHR)

C — MINI-AUDIT FUNDING REQUEST

Instructions: With reference to page 23 entitled Funding Information, determine if the facilities are eligible for both Federal and State funding or just Federal funding. then answer the questions correctly for the situation. This section must be signed and dated by the head of the organization.

If eligible for both Federal and State Funding:
Have you received a mini-audit grant before? [ ] Yes [X] No
Have you previously applied for mini-audit funding? [X] Yes [ ] No
Do you wish to apply for mini-audit funding? [ ] Yes [X] No

Date: _____

Name: _____

Signature: _____

If eligible for Federal funding only:
Have you received a mini-audit grant before? [ ] Yes [ ] No
Have you previously applied for mini-audit funding? [ ] Yes [ ] No
Do you wish to apply for mini-audit funding? [ ] Yes [ ] No
The 50% match for Federal funds will come from: (Use additional sheets if necessary.)

Date: _____

Name: _____

Signature: _____

D ENERGY REPORT CHECK-OFF

Check the type of energy report which was completed and submitted prior to this mini-audit report.

- ☐ Elementary School Energy Report (Form No. ED-00444-02)
- ☐ Secondary School Energy Report (Form No. ED-00445-02)
- XX ☒ Existing Building Energy Report (Form No. EN-00041-01)

If an energy report has not been completed previous to this mini-audit report, one must be included with this report. Elementary, secondary, and vocational schools should use form ED-00444-02 or form ED-00445-02, depending on building complexity. All other buildings should use the existing building energy report, form EN-00041-01.

E MINI-AUDIT STATEMENTS

Instructions: This section is to be completed and signed by a registered professional engineer or by a certified mini-auditor who has successfully completed the State of Minnesota's Mini-Audit Procedures Course. This section should be completed after this mini-audit report and an energy report are completed. All blanks must be filled in.

I have reviewed the energy report and/or the energy report results for this building. I found all information contained therein to be correct *OR* I have corrected any misinformation on the energy report which will be resubmitted with this mini-audit report to the Minnesota Energy Agency.

I am not directly responsible for the day to day operations of this building being audited.

I have fully disclosed my financial interests relating to this mini-audit and any energy conservation measures considered by this audit.

I have walked through this building and have found the recommendations listed in section I of this mini-audit report to be the operations and maintenance changes, and low cost energy conservation measures, which would reduce energy consumption in this building.

I have made a rough estimate, in section G, of the range of savings which may result from the implementation of all of the mini-audit opportunities listed in section I. I am not responsible if the actual savings resulting from this mini-audit do not fall within the estimated range.

Based on actual records, the energy conservation operating and maintenance procedures listed in section K did not (did, did not) save at least 20% of the building's energy consumption as specified in section I.

Based upon my observation of the physical characteristics of this building and the building's major energy using systems, I recommend that this should not (should, should not) be the subject of a maxi-audit.
I realize that this is not a final judgement, that the State reserves the right to make the maxi-audit funding determination based on this mini-audit report and other criteria.

Based upon the information in section E and the information referred to in section F, I recommend that this building should not (should, should not) undergo further solar conversion analysis, and/or should not (should, should not) undergo further analysis of the renewable resources — waste, wind, wood. (Circle proper resources)

In my judgement, as a mini-auditor, all of the above statements are true and correct.

Randy Smith
Mini-Auditor's Name (Print or Type)

Signature 206

Rieke Carroll Muller Assoc., Inc.
Firm Name (if none, enter none)

P.O. Box 130 Hopkins, MN 55343
Address

(612) 935-6901
Phone

5-23-80
Date

Witnessed by:

Building Organizational Authority (Print or Type)

Signature

Date

F AUDIT TEAM

NAME	POSITION	ORGANIZATION
Randy Smith	Certified Mini-Auditor	Rieke Carroll Muller Assoc., Inc.
Reinert Ege	Maintenance Engineer	City of Bloomington

G BUILDING INFORMATION

BRIEF DESCRIPTION OF GENERAL BUILDING CONDITION (i.e. type, and function)
Good, Clubhouse

MAJOR CHANGES PLANNED WITHIN NEXT 15 YEARS (i.e. demolition, rehabilitation, conversion from one building type to another)
None

STRUCTURAL COMPONENTS OF ROOF (i.e. metal beams, wooden rafters, concrete)
Wooden Rafters

ROOFING MATERIAL (i.e. tar and gravel, shingles, tile)
Shingles

H SOLAR POTENTIAL INFORMATION

INSTRUCTIONS: Correctly answer the following questions for the building being mini-audited.

Is there open land adjacent to the building?
☒ Yes ☐ No

Solar collectors need to be located in an unshaded area. Is the roof of the building and the south facing wall unshaded between the hours of 9 a.m. and 3 p.m.?
Roof: ☒ Yes ☐ No
South facing Wall: ☒ Yes ☐ No

If the roof or wall are partly shaded, what percentage of the surface is unshaded?
% of roof unshaded _____ %
% of south facing wall unshaded _____ %

What is the overall shape of the building?
☐ square ☒ rectangle ☐ H-shaped ☐ E-shaped ☐ other (specify) _____

Is the roof of the building flat or pitched?
☐ flat ☒ pitched

If pitched, what is the compass orientation of the ridgeline? North-South

If pitched, what is the angle that the roof makes with horizontal? 45 °

Are there large obstructions on the roof such as chimneys, rooms for mechanical equipment, ventilating units, water towers, etc?
☒ Yes ☐ No

What is the exterior facing material for the south facing wall? Wood Siding

What percentage of the south facing wall is glass? 50 %

Is the building's space heating equipment located within or on the building? (A no answer indicates the equipment is in a separate building.)
☒ Yes ☐ No

If the space heating equipment is inside the building, where is it located?
☐ Ground Floor ☒ Basement ☐ Roof ☐ Other (specify) _____

Is the building's water heating equipment located within the building? (A no answer indicates the equipment is in a separate building.)
☒ Yes ☐ No

If the water heating equipment is inside the building, where is it located?
☐ Ground Floor ☒ Basement ☐ Other (specify) _____

Is the water heating system a central system, does it consist of multiple units, or is it a combination of the central and multiple units?
☒ Central ☐ Multiple ☐ Combination

I — 20% SAVINGS DATA

Instructions: Enter the total energy used of each fuel type for the base period and the year when there was a 20% or greater energy savings. Indicate the unit of measure. Enter the appropriate conversion factor from Appendix B to convert energy usage into Btu's. Be sure to enter the fiscal years of which the data applies. Refer to pages 7 and 15 for a complete explanation of this section.

BASE PERIOD YEAR — Fiscal Year _____

ENERGY TYPE	ENERGY USAGE	CONVERSION FACTOR	BTU USAGE
Electricity			
Fuel 1			
Fuel 2			
TOTAL			

20% SAVINGS YEAR — Fiscal Year _____

ENERGY TYPE	ENERGY USAGE	CONVERSION FACTOR	BTU USAGE
Electricity			
Fuel 1			
Fuel 2			
TOTAL			

J — SAVINGS ESTIMATION

Instructions: This section is to be completed by the mini-auditor after the walk-thru portion of the mini-audit. First, check the appropriate boxes which state the roughly estimated range of the percent of total electrical and fuel consumption which would be saved resulting from the implementation of all of the new mini-audit opportunities listed in section L. Secondly, calculate the range of energy and cost savings by multiplying the estimated percentages by the annual electrical and fuel consumption data on the energy report.

1 Check two boxes in each category —

Range of Electrical Savings — ☒ 0% ☒ 5% ☐ 10% ☐ 15% ☐ 20% ☐ 25% ☐ other (specify) _____

Range of Fuel Savings — ☐ 0% ☒ 5% ☒ 10% ☐ 15% ☐ 20% ☐ 25% ☐ other (specify) _____

2 Calculate ranges of energy and cost savings —

Range of Electrical Savings

	% Range		Annual Electrical Consumption		Range of Energy Savings		% Range		Annual Electrical Dollars Spent		Range of Electrical Dollars Savings
lower bound	0 %	x	49560 kwh	=	0 kwh,		0 %	x	$ 3116.55	=	$ 0
to upper bound	5 %	x	49560 kwh	=	2478 kwh,		5 %	x	$ 3116.55	=	$ 155.83

3 **Range of Fuel Savings**

	% Range		Annual Fuel Consumption		Range of Fuel Savings		% Range		Annual Fuel Dollars Spent		Range of Fuel Dollars Savings
lower bound	5 %	x	27.5×10^6 Btu	=	13.8×10^5 Btu,		5 %	x	$ 654.19	=	$ 32.71
to upper bound	10 %	x	27.5×10^6 Btu	=	27.5×10^5 Btu,		10 %	x	$ 654.19	=	$ 65.42

The mini-auditor is not responsible if actual savings resulting from the implementation of the energy conservation opportunities listed in section I do not fall between the roughly estimated ranges which are specified.

K

Instructions. Read through the list of energy conservation opportunities provided. As you read through the items, list below those items which have already been undertaken in your facility. The description of the past energy conservation action should contain the specific building location where the recommendation applies, if applicable. Indicate the date of implementation of each item and its classification number. Energy conserving items which have been undertaken and are not on the list provided should also be included along with their appropriate classification numbers. The classification number should be taken from the classification scheme for energy conservation opportunities listed on pages 25 through 37. *This section of the mini-audit report should be completed by building personnel prior to the walk-through by the mini-auditor.*

ITEM NO.	CLASSIFICATION NO.		PAST ENERGY CONSERVATION ACTIONS	ENERGY SAVINGS	ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS		OPTIONAL:	OPTIONAL:	

Note: Reproduce this page as necessary

NEW OPPORTUNITIES

Instructions: Read through the energy conservation recommendation list provided. Then walk through the building with the list. Examine the suggested maintenance and operational changes, and any other low cost energy conservation measures, that pertain to the facility. As you go along, record the item number, the classification number of the recommendation, and the new mini-audit opportunity. The description of the mini-audit opportunity should contain the specific building location where the recommendation applies, if applicable. Any recommendation not found on the list may also be included. For those other recommendations, assign an appropriate classification number from the classification scheme for energy conservation opportunities listed on pages 25 through 37. The date of implementation should only be completed as the recommendation is implemented. *This section of the mini-audit report should be completed by the mini-audit team during the building walk-through.*

ITEM NO	CLASSIFICATION NO. MAJOR CLASS	CLASSIFICATION NO. SUB CLASS	NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS OPTIONAL:	ENERGY COST SAVINGS OPTIONAL:	DATE OF IMPLEMENTATION
1	1	1	Keep all controls free of dust.			
2	2	1	Check the amount of insulation in the ceiling.			
3	2	1	Add insulation in attic spaces if needed.			
4	2	2	Weatherstrip all exterior doors.			
5	2	2	Replace an existing door with one of a higher R-value.			
6	2	3	Add or modify drapes, blinds, and shutters to resist temperature changes more effectively.			
7	2	3	Plant deciduous trees for summer shading.			
8	2	3	South and west facing windows should be fitted with solar shading devices (i.e. overhangs, fins, trellises, awnings, interior drapes) to reduce heat gain.			
9	2	4	Add insulation around the perimeter or rim joist area of the building.			
10	2	8	Insulate walls with rigid insulation on inside surfaces, or place loose fill insulation in wall cavaties.			
11	2	10	Replace single glazed windows with double glazed thermopanes.			
12	3	1	Check operation of entire heating/cooling control system, including control valves and dampers.			
13	3	1	Check the calibration of all controllers and devices for proper settings and operations.			
14	3	1	Raise the supply air temperature for cooling to the highest point necessary to provide minimum required cooling.			
15	3	1	Lower the supply air temperature for heating to the lowes point necessary to provide minimum required heating.			
16	3	1	65°F maximum occupied, 65°F maximum unoccupied during the heating season.			

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Note 2: Reproduce this page as necessary.

NEW OPPORTUNITIES

Instructions: Read through the energy conservation recommendation list provided. Then walk through the building with the list. Examine the suggested maintenance and operational changes, and any other low cost energy conservation measures, that pertain to the facility. As you go along, record the item number, the classification number of the recommendation, and the new mini-audit opportunity. The description of the mini-audit opportunity should contain the specific building location where the recommendation applies, if applicable. Any recommendation not found on the list may also be included. For those other recommendations, assign an appropriate classification number from the classification scheme for energy conservation opportunities listed on pages 25 through 37. The date of implementation should only be completed as the recommendation is implemented. *This section of the mini-audit report should be completed by the mini-audit team during the building walk-through.*

ITEM NO.	CLASSIFICATION NO. MAJOR CLASS	CLASSIFICATION NO. SUB CLASS	NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS OPTIONAL:	ENERGY COST SAVINGS OPTIONAL:	DATE OF IMPLEMENTATION
17	3	1	78°F minimum when occupied and no cooling when unoccupied during the cooling season.			
18	3	1	Provide atmospheric cooling as long as possible.			
19	3	2	Clean and remove obstructions from all room air outlets and inlets (diffusers, registers, and grillers). They should be kept clean and free of all dirt and foreign materials.			
20	3	3	Inspect fans for normal operation.			
21	3	3	Keep condenser coil face clean to permit proper air flow.			
22	3	3	Inspect ductwork for air leakage. Seal all leaks by taping or caulking.			
23	3	3	Inspect ductwork insulation.			
24	3	3	Inspect damper blades and linkages. Clean, oil and adjust.			
25	3	3	Take special note of fresh air dampers making sure that they close tightly and be sure to repair, replace or provide blade edge gaskets and gasketing at the end of blades.			
26	3	3	Clean or replace filters periodically.			
27	4	1	Instruct occupants and maintenance personnel to switch off all lights when they are not needed.			
28	4	2	Clean windows.			
29	4	3	Clean fixtures and lamps regularly.			
30	4	4	Use lower wattage lamps to provide the necessary illumination.			
31	4	4	Allow part of a lighting system to be turned off, while maintaining the necessary light.			
32	5	1	Keep records of the operating schedule, monthly energy consumption and purchase of any new equipment that affects energy consumption of efficiency of the building. These records will indicate the impact			

Note 1: Date of Implementation should only be completed as the recommendation is implemented. The mini-audit report may be submitted to the Minnesota Energy Agency before the "Date of Implementation" has been completed.

Note 2: Reproduce this page as necessary.

NEW OPPORTUNITIES

Instructions: Read through the energy conservation recommendation list provided. Then walk through the building with the list. Examine the suggested maintenance and operational changes, and any other low cost energy conservation measures, that pertain to the facility. As you go along, record the item number, the classification number of the recommendation, and the new mini-audit opportunity. The description of the mini-audit opportunity should contain the specific building location where the recommendation applies, if applicable. Any recommendation not found on the list may also be included. For those other recommendations, assign an appropriate classification number from the classification scheme for energy conservation opportunities listed on pages 25 through 37. The date of implementation should only be completed as the recommendation is implemented. *This section of the mini-audit report should be completed by the mini-audit team during the building walk-through.*

ITEM NO.	CLASSIFICATION NO. MAJOR CLASS	CLASSIFICATION NO. SUB CLASS	NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS OPTIONAL:	ENERGY COST SAVINGS OPTIONAL:	DATE OF IMPLEMENTATION
			of energy conservation measures.			
33	5	1	Review the record books on a regular basis.			
34	6	2	The burner system of fossil-fuel water heaters should be kept clean and in good operating condition.			
35	7	3	Clean air-sides, remove soot, and scrape scale in forced warm air furnaces.			
36	7	3	If the firing rate of gas or oil burners is too high, it causes short cycling and excessive fuel consumption. Too low a rate requires constant operating and delivers inadequate heat to the spaces.			
37	7	4	Maintain the lowest possible hot water temperature which will meet domestic hot water needs.			
38	7	4	Turn off gas pilots for furnaces, boilers, and space heaters during the non-heating months and during long unoccupied periods.			

Note 1: Date of Implementation should only be completed as the recommendation is implemented. The mini-audit report may be submitted to the Minnesota Energy Agency before the "Date of Implementation" has been completed.

Note 2: Reproduce this page as necessary.

MINI-AUDIT REPORT

FORM NO. MIN-01

A — CONTACT DATA

BUILDING NAME		NAME OF ORGANIZATION		DATE
Water Treatment Plant		City of Bloomington		5-17-80
BUILDING ADDRESS		**ADDRESS**		
9304 Poplar Bridge Road		2215 West Old Shakopee Road		
CITY	**ZIP CODE**	**CITY**	**ZIP CODE**	
Bloomington, MN	55437	Bloomington, MN	55437	
PERSON COMPLETING FORM	**TELEPHONE**	**CONTACT PERSON**	**TELEPHONE**	
Randy Smith	(612) 935-6901	Arthur Jensen	(612) 881-5811	

B — BUILDING ELIGIBILITY CODE

Instructions: For blocks 1 and 2 check the box which best fits the building ownership conditions. For block 3 determine which of the four categories describes the building type and then within the category check off the sub category befitting the building function.

1. OWNERSHIP TYPE
   - [X] Public (PUB)
   - [ ] Non-Profit Association (NAP)

2. ULTIMATE OWNER
   - [ ] County (CNTY)
   - [X] City (CITY)
   - [ ] Township (TOWN)
   - [ ] State (STAT)
   - [ ] Public School (PUSC)
   - [ ] Private School (PRSC)
   - [ ] Non-Profit Association (NPAP)
   - [ ] Indian Tribe (INDN)

3a. SCHOOLS
   - [ ] Elementary (SCHL-ELM)
   - [ ] Secondary (SCHL-SECD)
   - [ ] Coll. or Univ. (SCHL-POST)
   - [ ] Vocational (SCHL-VOCL)
   - [ ] Education Agency (SCHL-ADMN)
   - [ ] Administration (SCHL-ADMN)
   - [ ] OTHER (SCHL-OTHR)

b. PUBLIC CARE
   - [ ] Nursing Home (PBCR-NURS)
   - [ ] Long Term Care (PBCR-TERM)
   - [ ] Rehab. Facility (PBCR-RHAB)
   - [ ] Public Health Ctr. (PBCR-HCTR)
   - [ ] Res. Child Care Ctr. (PBCR-RCCC)

c. LOCAL GOVERNMENT
   - [ ] Office (LOCG-OFFC)
   - [ ] Storage (LOCG-STRG)
   - [ ] Service (LOCG-SERV)
   - [ ] Library (LOCG-LBRY)
   - [ ] Police (LOCG-PLCE)
   - [ ] Fire (LOCG-FIRE)
   - [X] OTHER (LOCG-OTHR)

d. HOSPITALS
   - [ ] General (HOSP-GENL)
   - [ ] Tuberculosis (HOSP-TUBR)
   - [ ] OTHER (HOSP-OTHR)

C — MINI-AUDIT FUNDING REQUEST

Instructions: With reference to page 23 entitled Funding Information, determine if the facilities are eligible for both Federal and State funding or just Federal funding. then answer the questions correctly for the situation. This section must be signed and dated by the head of the organization.

If eligible for both Federal and State Funding:
Have you received a mini-audit grant before? [ ] Yes [X] No
Have you previously applied for mini-audit funding? [X] Yes [ ] No
Do you wish to apply for mini-audit funding? [ ] Yes [X] No

Date: _____

Name: _____

Signature: _____

If eligible for Federal funding only:
Have you received a mini-audit grant before? [ ] Yes [ ] No
Have you previously applied for mini-audit funding? [ ] Yes [ ] No
Do you wish to apply for mini-audit funding? [ ] Yes [ ] No
The 50% match for Federal funds will come from: (Use additional sheets if necessary.)

Date: _____

Name: _____

Signature: _____

D ENERGY REPORT CHECK-OFF

Check the type of energy report which was completed and submitted prior to this mini-audit report.

- ☐ Elementary School Energy Report (Form No. ED-00444-02)
- ☐ Secondary School Energy Report (Form No. ED-00445-02)
- ☒ Existing Building Energy Report (Form No. EN-00041-01)

If an energy report has not been completed previous to this mini-audit report, one must be included with this report. Elementary, secondary, and vocational schools should use form ED-00444-02 or form ED-00445-02, depending on building complexity. All other buildings should use the existing building energy report, form EN-00041-01.

E MINI-AUDIT STATEMENTS

Instructions: This section is to be completed and signed by a registered professional engineer or by a certified mini-auditor who has successfully completed the State of Minnesota's Mini-Audit Procedures Course. This section should be completed after this mini-audit report and an energy report are completed. All blanks must be filled in.

I have reviewed the energy report and/or the energy report results for this building. I found all information contained therein to be correct *OR* I have corrected any misinformation on the energy report which will be resubmitted with this mini-audit report to the Minnesota Energy Agency.

I am not directly responsible for the day to day operations of this building being audited.

I have fully disclosed my financial interests relating to this mini-audit and any energy conservation measures considered by this audit.

I have walked through this building and have found the recommendations listed in section I of this mini-audit report to be the operations and maintenance changes, and low cost energy conservation measures, which would reduce energy consumption in this building.

I have made a rough estimate, in section G, of the range of savings which may result from the implementation of all of the mini-audit opportunities listed in section I. I am not responsible if the actual savings resulting from this mini-audit do not fall within the estimated range.

Based on actual records, the energy conservation operating and maintenance procedures listed in section K did not (did, did not) save at least 20% of the building's energy consumption as specified in section I.

Based upon my observation of the physical characteristics of this building and the building's major energy using systems, I recommend that this should (should, should not) be the subject of a maxi-audit.
I realize that this is not a final judgement, that the State reserves the right to make the maxi-audit funding determination based on this mini-audit report and other criteria.

Based upon the information in section E and the information referred to in section F, I recommend that this building should not (should, should not) undergo further solar conversion analysis, and/or should not (should, should not) undergo further analysis of the renewable resources -- waste, wind, wood. (Circle proper resources)

In my judgement, as a mini-auditor, all of the above statements are true and correct.

Randy Smith
Mini-Auditor's Name (Print or Type)

Randy Smith 206
Signature

Rieke Carroll Muller Assoc., Inc.
Firm Name (if none, enter none)

P.O. Box 130 Hopkins, MN 55343
Address

(612) 935-6901
Phone

5-17-80
Date

Witnessed by:

Building Organizational Authority (Print or Type)

Signature

Date

F AUDIT TEAM

NAME	POSITION	ORGANIZATION
Randy Smith	Certified Mini Auditor	Rieke Carroll Muller Assoc., Inc.
Paul Kaeding	Electrical Engineer	Rieke Carroll Muller Assoc., Inc.
Bill Lloyd	Superintendent	City of Bloomington
Craig Hoffman	Plant Manager	City of Bloomington

G BUILDING INFORMATION

BRIEF DESCRIPTION OF GENERAL BUILDING CONDITION (i.e. type, and function)
Good, Water Treatment

MAJOR CHANGES PLANNED WITHIN NEXT 15 YEARS (i.e. demolition, rehabilitation, conversion from one building type to another)
None

STRUCTURAL COMPONENTS OF ROOF (i.e. metal beams, wooden rafters, concrete)
Concrete

ROOFING MATERIAL (i.e. tar and gravel, shingles, tile)
Metal

H SOLAR POTENTIAL INFORMATION

INSTRUCTIONS: Correctly answer the following questions for the building being mini-audited.

Is there open land adjacent to the building?
☒ Yes ☐ No

Solar collectors need to be located in an unshaded area. Is the roof of the building and the south facing wall unshaded between the hours of 9 a.m. and 3 p.m.?
Roof: ☒ Yes ☐ No
South facing Wall: ☐ Yes ☒ No

If the roof or wall are partly shaded, what percentage of the surface is unshaded?
% of roof unshaded _____ %
% of south facing wall unshaded 20 %

What is the overall shape of the building?
☒ square ☐ rectangle ☐ H-shaped ☐ E-shaped ☐ other (specify) _____

Is the roof of the building flat or pitched?
☐ flat ☒ pitched

If pitched, what is the compass orientation of the ridgeline? East-West

If pitched, what is the angle that the roof makes with horizontal? 40 °

Are there large obstructions on the roof such as chimneys, rooms for mechanical equipment, ventilating units, water towers, etc?
☐ Yes ☒ No

What is the exterior facing material for the south facing wall? Face brick

What percentage of the south facing wall is glass? 5 %

Is the building's space heating equipment located within or on the building? (A no answer indicates the equipment is in a separate building.)
☒ Yes ☐ No

If the space heating equipment is inside the building, where is it located?
☒ Ground Floor ☐ Basement ☐ Roof ☐ Other (specify) _____

Is the building's water heating equipment located within the building? (A no answer indicates the equipment is in a separate building.)
☒ Yes ☐ No

If the water heating equipment is inside the building, where is it located?
☒ Ground Floor ☐ Basement ☐ Other (specify) _____

Is the water heating system a central system, does it consist of multiple units, or is it a combination of the central and multiple units?
☒ Central ☐ Multiple ☐ Combination

I — 20% SAVINGS DATA

Instructions: Enter the total energy used of each fuel type for the base period and the year when there was a 20% or greater energy savings. Indicate the unit of measure. Enter the appropriate conversion factor from Appendix B to convert energy usage into Btu's. Be sure to enter the fiscal years of which the data applies. Refer to pages 7 and 15 for a complete explanation of this section.

BASE PERIOD YEAR — Fiscal Year _____

ENERGY TYPE	ENERGY USAGE	CONVERSION FACTOR	BTU USAGE
Electricity			
Fuel 1			
Fuel 2			
TOTAL			

20% SAVINGS YEAR — Fiscal Year _____

ENERGY TYPE	ENERGY USAGE	CONVERSION FACTOR	BTU USAGE
Electricity			
Fuel 1			
Fuel 2			
TOTAL			

J — SAVINGS ESTIMATION

Instructions: This section is to be completed by the mini-auditor after the walk-thru portion of the mini-audit. First, check the appropriate boxes which state the roughly estimated range of the percent of total electrical and fuel consumption which would be saved resulting from the implementation of all of the new mini-audit opportunities listed in section L. Secondly, calculate the range of energy and cost savings by multiplying the estimated percentages by the annual electrical and fuel consumption data on the energy report.

1 Check two boxes in each category —

Range of Electrical Savings — ☒ 0% ☒ 5% ☐ 10% ☐ 15% ☐ 20% ☐ 25% ☐ other (specify) _____

Range of Fuel Savings — ☐ 0% ☒ 5% ☒ 10% ☐ 15% ☐ 20% ☐ 25% ☐ other (specify) _____

2 Calculate ranges of energy and cost savings —

Range of Electrical Savings

	% Range		Annual Electrical Consumption		Range of Energy Savings	% Range		Annual Electrical Dollars Spent		Range of Electrical Dollars Savings
lower bound	0 %	x	34.9×10^5 kwh	=	0 kwh,	0 %	x	$81449.09	=	$ 0
to upper bound	5 %	x	34.9×10^5 kwh	=	to 17.5×10^4 kwh,	to 5 %	x	$81449.09	=	to $ 4072.45

3 **Range of Fuel Savings**

	% Range		Annual Fuel Consumption		Range of Fuel Savings	% Range		Annual Fuel Dollars Spent		Range of Fuel Dollars Savings
lower bound	5 %	x	10.4×10^8 Btu	=	51.9×10^6 Btu,	5 %	x	$7146.89	=	$ 357.34
to upper bound	10 %	x	10.4×10^8 Btu	=	to 10.4×10^7 Btu,	to 10 %	x	$7146.89	=	to $ 714.69

The mini-auditor is not responsible if actual savings resulting from the implementation of the energy conservation opportunities listed in section I do not fall between the roughly estimated ranges which are specified.

K

Instructions: Read through the list of energy conservation opportunities provided. As you read through the items, list below those items which have already been undertaken in your facility. The description of the past energy conservation action should contain the specific building location where the recommendation applies, if applicable. Indicate the date of implementation of each item and its classification number. Energy conserving items which have been undertaken and are not on the list provided should also be included along with their appropriate classification numbers. The classification number should be taken from the classification scheme for energy conservation opportunities listed on pages 25 through 37. *This section of the mini-audit report should be completed by building personnel prior to the walk-through by the mini-auditor.*

ITEM NO.	CLASSIFICATION NO.		PAST ENERGY CONSERVATION ACTIONS	ENERGY SAVINGS	ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS		OPTIONAL:	OPTIONAL:	

Note Reproduce this page as necessary

NEW OPPORTUNITIES

Instructions: Read through the energy conservation recommendation list provided. Then walk through the building with the list. Examine the suggested maintenance and operational changes, and any other low cost energy conservation measures, that pertain to the facility. As you go along, record the item number, the classification number of the recommendation, and the new mini-audit opportunity. The description of the mini-audit opportunity should contain the specific building location where the recommendation applies, if applicable. Any recommendation not found on the list may also be included. For those other recommendations, assign an appropriate classification number from the classification scheme for energy conservation opportunities listed on pages 25 through 37. The date of implementation should only be completed as the recommendation is implemented. *This section of the mini-audit report should be completed by the mini-audit team during the building walk-through.*

ITEM NO	CLASSIFICATION NO. MAJOR CLASS	CLASSIFICATION NO. SUB CLASS	NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS OPTIONAL:	ENERGY COST SAVINGS OPTIONAL:	DATE OF IMPLEMENTATION
1	1	1	Keep all controls free of dust.			
2	1	2	Look for loose connections and bad contacts on a regular basis.			
3	1	2	Eliminate excessive vibration.			
4	1	2	Lubricate motors to reduce wear and excessive torque.			
5	1	2	Replace worn bearings.			
6	1	2	Keep motors clean to make cooling easier.			
7	1	2	Balance three-phase power sources to motors.			
8	1	2	Check for over-voltage conditions on motors.			
9	1	2	Check alignment of motors to driven equipment, align and tighten as necessary.			
10	1	2	Replace worn or defective motors with motors that are sized as close to the load as possible and use the highest efficiency motors available.			
11	1	2	Where it is impractical to replace motors which have low loads and power factors, use capacitors at motor terminals to correct the power factor to 90%.			
12	1	3	Check power factors and make adjustments to correct equipment.			
13	2	2	Weatherstrip all exterior doors including garage or delivery doors.			
14	2	2	Keep all doors between unheated corridors and heated spaces closed.			
15	2	2	Replace an existing door with one of a higher R-value.			
16	2	3	Add or modify window drapes, blinds and shutters to resist temperature changes more effectively.			
17	2	6	Inspect the roof and seal all cracks that allow outdoor air and water to enter.			
18	2	7	Check roof insulation for damage due to roof leakage.			
19	2	8	Caulk all cracks that allow air and moisture into the building.			

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L NEW OPPORTUNITIES

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ITEM NO	CLASSIFICATION NO		NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS	ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS		OPTIONAL:	OPTIONAL:	
20	2	8	Caulk around all pipes, louvers, and other openings in the walls.			
21	2	8	Consider insulating walls with rigid insulation on inside.			
22	2	10	Repair broken or cracked windows. Replace with standard or tempered glass of proper thickness, according to building code requirements.			
23	2	11	Consider replacing some windows on the north side of the building with insulation wall panels.			
24	2	6	Consider installing insulation panels in the metal panel areas between windows and above doors.			
25	3	1	Check operation of entire heating/ cooling control system, including control valves and dampers.			
26	3	1	Check the calibration of all controllers and devices for proper settings and operations.			
27	3	1	65^{o}F maximum occupied.			
28	3	1	Consider reducing temperature in rooms with open tanks. This will prevent heat loss to the water that is being treated.			
29	3	1	78^{o}F minimum when occupied			
30	3	2	Clean the air side of all direct radiators, fin tube convectors and coils to enhance heat transfer.			
31	3	2	Vent all hot water radiators and convectors to assure that water will completely fill the interior passages.			
32	3	2	Clean and remove obstructions from all room outlets and inlets (diffusers, registers and grillers). They should be kept clean and free of all dirt and foreign materials.			
33	3	3	Keep fan blades clear.			
34	3	3	Inspect and lubricate bearings of fans.			

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NEW OPPORTUNITIES

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ITEM NO	CLASSIFICATION NO		NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS	ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS		OPTIONAL:	OPTIONAL:	
35	3	3	Inspect drive belts. Adjust or replace as necessary to ensure proper operation.			
36	3	3	Inspect inlet and discharge screens of fans. They should be kept free of dirt and debris at all times.			
37	3	3	Inspect fans for normal operation.			
38	3	3	Check for packing wear which can cause excessive leakage. Repack to avoid excessive water wastage and shaft erosion.			
39	3	3	Inspect damper blades and linkages. Clean, oil and adjust.			
40	3	3	Take special note of fresh air dampers making sure that they close tightly and be sure to repair, replace or provide blade edge gaskets and gasketing at the end of blades.			
41	3	3	Check fresh air damper control and operator for tight closing and for correct column of minimum fresh air supply as per code requirements.			
42	3	3	Clean or replace filters periodically.			
43	4	1	Instruct occupants and maintenance personnel to switch off all lights when they are not needed.			
44	4	1	Consider double switching in the conference room.			
45	4	1	Rooms that are presently double switched, consider disconnecting a number of fixtures or recircuiting to reduce the lighting on hte minimum step.			
46	4	3	Clean fixtures and lamps regularly.			
47	4	3	Consider replacement of incandescent light fixtures with enclosed high pressure sodium fixtures or fluorescent fixtures in the following ares: ammonia room, chlorine room, polymer room, room below lime slaker, sludge pump room.			

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NEW OPPORTUNITIES

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ITEM NO	CLASSIFICATION NO		NEW MINI-AUDIT OPPORTUNITIES	OPTIONAL: ENERGY SAVINGS	OPTIONAL: ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS				
48	4	4	Garage area - This area is presently lit with fluorescent lighting.			
			Consider sodium lighting or enclosed fluorescent lighting. This will			
			provide a higher output from a better maintenace factor and may result			
			in fewer fixtures being required.			
49	4	4	Use lower wattage lamps to provide the necessary illumination.			
50	4	4	Allow part of a lighting system to be turned off, while maintaining			
			the necessary light.			
51	4	4	Provide desk or table lamps in task localized areas.			
52	5	1	Keep records of the operating schedule, monthly energy consumption			
			and purchase of any new equipment that affects energy consumption			
			of efficiency of the building. These records will indicate the impact			
			of energy conservation measures.			
53	5	1	Review the record books on a regular basis.			
54	5	2	All insulation applied to a hot water system should be kept in			
			good condition.			
55	5	2	All electric heating equipment should be checked for corroded			
			elements and loose connections and repaired as required.			
56	5	2	Periodically drain and remove the sediment from water heater.			
57	7	3	If the firing rate of gas or oil burners is too high, it causes			
			short cycling and excessive fuel consumption. Too low a rate			
			requires constant operating and delivers inadequate heat to the			
			spaces. If the boiler is oversized, adjust the firing rate to the			
			building load, not the boiler.			
58	7	3	Schedule boiler blowdown on an as-needed basis rather than on a fixed			
			timetable. Smaller, more frequent blowdown is preferable to larger,			

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NEW OPPORTUNITIES

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ITEM NO	CLASSIFICATION NO		NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS OPTIONAL:	ENERGY COST SAVINGS OPTIONAL:	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS				
			less frequent blowdown.			
59	7	4	Maintain the lowest possible hot water temperature which will meet space or domestic hot water needs.			
60	7	4	If there are no indoor-outdoor modulating controls, raise or lower the operating temperature of hot water systems to conform to outdoor conditions. For example, operate a boiler at 120°F with outdoor temperature at 60°F, and raise the level to 160°F when it is 20°F outdoors.			
61	7	4	Clean filters regularly in forced warn air units to reduce the operating time of the furnace.			
62	7	4	Maintain water level or pressure to radiators or coils on the highest level of the building.			
63	7	4	Turn off gas pilots for furnaces boilers, and space heaters during the non-heating months and during long unoccupied periods.			
64	7	4	Keep all heat exchanger surfaces clean. Check air-to-fuel ratio and adjust as necessary.			
65	7	4	Inspect casing for air leaks and seal as necessary.			
66	7	4	Clean the unit heaters.			
67	7	4	Balance the make-up air to equal or slightly exceed exhaust.			

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Note 2 Reproduce this page as necessary

MINI-AUDIT REPORT

FORM NO. MIN-01

A — CONTACT DATA

BUILDING NAME		NAME OF ORGANIZATION	DATE
Water Reservoir - Pump House		City of Bloomington	6-11-80
BUILDING ADDRESS		**ADDRESS**	
2200 West 82nd Street		2215 West Old Shakopee Road	
CITY	**ZIP CODE**	**CITY**	**ZIP CODE**
Bloomington, MN	55431	Bloomington, MN	55431
PERSON COMPLETING FORM	**TELEPHONE**	**CONTACT PERSON**	**TELEPHONE**
Randy Smith	(612) 935-6901)	Arthur Jensen	(612) 881-5811

B — BUILDING ELIGIBILITY CODE

Instructions: For blocks 1 and 2 check the box which best fits the building ownership conditions. For block 3 determine which of the four categories describes the building type and then within the category check off the sub category befitting the building function.

1. OWNERSHIP TYPE
   - [X] Public (PUB)
   - [ ] Non-Profit Association (NAP)

2. ULTIMATE OWNER
   - [ ] County (CNTY)
   - [X] City (CITY)
   - [ ] Township (TOWN)
   - [ ] State (STAT)
   - [ ] Public School (PUSC)
   - [ ] Private School (PRSC)
   - [ ] Non-Profit Association (NPAP)
   - [ ] Indian Tribe (INDN)

3a. SCHOOLS
   - [ ] Elementary (SCHL-ELM)
   - [ ] Secondary (SCHL-SECD)
   - [ ] Coll. or Univ. (SCHL-POST)
   - [ ] Vocational (SCHL-VOCL)
   - [ ] Education Agency (SCHL-ADMN)
   - [ ] Administration (SCHL-ADMN)
   - [ ] OTHER (SCHL-OTHR)

b. PUBLIC CARE
   - [ ] Nursing Home (PBCR-NURS)
   - [ ] Long Term Care (PBCR-TERM)
   - [ ] Rehab. Facility (PBCR-RHAB)
   - [ ] Public Health Ctr. (PBCR-HCTR)
   - [ ] Res. Child Care Ctr. (PBCR-RCCC)

c. LOCAL GOVERNMENT
   - [ ] Office (LOCG-OFFC)
   - [ ] Storage (LOCG-STRG)
   - [ ] Service (LOCG-SERV)
   - [ ] Library (LOCG-LBRY)
   - [ ] Police (LOCG-PLCE)
   - [ ] Fire (LOCG-FIRE)
   - [X] OTHER (LOCG-OTHR)

d. HOSPITALS
   - [ ] General (HOSP-GENL)
   - [ ] Tuberculosis (HOSP-TUBR)
   - [ ] OTHER (HOSP-OTHR)

C — MINI-AUDIT FUNDING REQUEST

Instructions: With reference to page 23 entitled Funding Information, determine if the facilities are eligible for both Federal and State funding or just Federal funding. then answer the questions correctly for the situation. This section must be signed and dated by the head of the organization.

If eligible for both Federal and State Funding:
Have you received a mini-audit grant before? Yes [X] No
Have you previously applied for mini-audit funding? [X] Yes [ ] No
Do you wish to apply for mini-audit funding? [ ] Yes [X] No

Date: _____

Name: _____

Signature: _____

If eligible for Federal funding only:
Have you received a mini-audit grant before? [ ] Yes [ ] No
Have you previously applied for mini-audit funding? [ ] Yes [ ] No
Do you wish to apply for mini-audit funding? [ ] Yes [ ] No
The 50% match for Federal funds will come from: (Use additional sheets if necessary.)

Date: _____

Name: _____

Signature: _____

D ENERGY REPORT CHECK-OFF

Check the type of energy report which was completed and submitted prior to this mini-audit report.

☐ Elementary School Energy Report (Form No. ED-00444-02)
☐ Secondary School Energy Report (Form No. ED-00445-02)
☒ Existing Building Energy Report (Form No. EN-00041-01)

If an energy report has not been completed previous to this mini-audit report, one must be included with this report. Elementary, secondary, and vocational schools should use form ED-00444-02 or form ED-00445-02, depending on building complexity. All other buildings should use the existing building energy report, form EN-00041-01.

E MINI-AUDIT STATEMENTS

Instructions: This section is to be completed and signed by a registered professional engineer or by a certified mini-auditor who has successfully completed the State of Minnesota's Mini-Audit Procedures Course. This section should be completed after this mini-audit report and an energy report are completed. All blanks must be filled in.

I have reviewed the energy report and/or the energy report results for this building. I found all information contained therein to be correct *OR* I have corrected any misinformation on the energy report which will be resubmitted with this mini-audit report to the Minnesota Energy Agency.

I am not directly responsible for the day to day operations of this building being audited.

I have fully disclosed my financial interests relating to this mini-audit and any energy conservation measures considered by this audit.

I have walked through this building and have found the recommendations listed in section I of this mini-audit report to be the operations and maintenance changes, and low cost energy conservation measures, which would reduce energy consumption in this building.

I have made a rough estimate, in section G, of the range of savings which may result from the implementation of all of the mini-audit opportunities listed in section I. I am not responsible if the actual savings resulting from this mini-audit do not fall within the estimated range.

Based on actual records, the energy conservation operating and maintenance procedures listed in section K ___did not___ (did, did not) save at least 20% of the building's energy consumption as specified in section I.

Based upon my observation of the physical characteristics of this building and the building's major energy using systems, I recommend that this ___should___ (should, should not) be the subject of a maxi-audit.
I realize that this is not a final judgement, that the State reserves the right to make the maxi-audit funding determination based on this mini-audit report and other criteria.

Based upon the information in section E and the information referred to in section F, I recommend that this building ___should not___ (should, should not) undergo further solar conversion analysis, and/or ___should not___ (should, should not) undergo further analysis of the renewable resources — waste, wind, wood. (Circle proper resources)

In my judgement, as a mini-auditor, all of the above statements are true and correct.

Randy Smith
Mini-Auditor's Name (Print or Type)

Randy Smith 206
Signature

Rieke Carroll Muller Assoc., Inc.
Firm Name (if none, enter none)

P.O. Box 130 Hopkins, MN 55343
Address

(612) 935-6901
Phone

6-11-80
Date

Witnessed by:

Building Organizational Authority (Print or Type)

Signature

Date

F AUDIT TEAM

NAME	POSITION	ORGANIZATION
Randy Smith	Certified Mini-Auditor	Rieke Carroll Muller Assoc., Inc.
Craig Hoffman	Plant Manager	City of Bloomington

G BUILDING INFORMATION

BRIEF DESCRIPTION OF GENERAL BUILDING CONDITION (i.e. type, and function)
Good, Pumping Station

MAJOR CHANGES PLANNED WITHIN NEXT 15 YEARS (i.e. demolition, rehabilitation, conversion from one building type to another)
None

STRUCTURAL COMPONENTS OF ROOF (i.e. metal beams, wooden rafters, concrete)
Concrete

ROOFING MATERIAL (i.e. tar and gravel, shingles, tile)
Tar & Gravel

H SOLAR POTENTIAL INFORMATION

INSTRUCTIONS: Correctly answer the following questions for the building being mini-audited.

Is there open land adjacent to the building?
XX Yes ☐ No

Solar collectors need to be located in an unshaded area. Is the roof of the building and the south facing wall unshaded between the hours of 9 a.m. and 3 p.m.?
Roof: XX Yes ☐ No
South facing Wall: ☐ Yes XX No

If the roof or wall are partly shaded, what percentage of the surface is unshaded?
% of roof unshaded _____ %
% of south facing wall unshaded 80 %

What is the overall shape of the building?
☐ square XX rectangle ☐ H-shaped ☐ E-shaped ☐ other (specify) _____

Is the roof of the building flat or pitched?
XX flat ☐ pitched

If pitched what is the compass orientation of the ridgeline? _____

If pitched, what is the angle that the roof makes with horizontal? _____°

Are there large obstructions on the roof such as chimneys, rooms for mechanical equipment, ventilating units, water towers, etc?
☐ Yes XX No

What is the exterior facing material for the south facing wall? Face Brick

What percentage of the south facing wall is glass? 10 %

Is the building's space heating equipment located within or on the building? (A no answer indicates the equipment is in a separate building.)
XX Yes ☐ No

If the space heating equipment is inside the building, where is it located?
XX Ground Floor ☐ Basement ☐ Roof ☐ Other (specify) _____

Is the building's water heating equipment located within the building? (A no answer indicates the equipment is in a separate building.)
☐ Yes ☐ No None

If the water heating equipment is inside the building, where is it located?
☐ Ground Floor ☐ Basement ☐ Other (specify) _____

Is the water heating system a central system, does it consist of multiple units, or is it a combination of the central and multiple units?
☐ Central ☐ Multiple ☐ Combination

I — 20% SAVINGS DATA

Instructions: Enter the total energy used of each fuel type for the base period and the year when there was a 20% or greater energy savings. Indicate the unit of measure. Enter the appropriate conversion factor from Appendix B to convert energy usage into Btu's. Be sure to enter the fiscal years to which the data applies. Refer to pages 7 and 15 for a complete explanation of this section.

BASE PERIOD YEAR — Fiscal Year _____

ENERGY TYPE	ENERGY USAGE	CONVERSION FACTOR	BTU USAGE
Electricity			
Fuel 1			
Fuel 2			
TOTAL			

20% SAVINGS YEAR — Fiscal Year _____

ENERGY TYPE	ENERGY USAGE	CONVERSION FACTOR	BTU USAGE
Electricity			
Fuel 1			
Fuel 2			
TOTAL			

J — SAVINGS ESTIMATION

Instructions: This section is to be completed by the mini-auditor after the walk-thru portion of the mini-audit. First, check the appropriate boxes which state the roughly estimated range of the percent of total electrical and fuel consumption which would be saved resulting from the implementation of all of the new mini-audit opportunities listed in section L. Secondly, calculate the range of energy and cost savings by multiplying the estimated percentages by the annual electrical and fuel consumption data on the energy report.

1 Check two boxes in each category —

Range of Electrical Savings — ☒ 0% ☒ 5% ☐ 10% ☐ 15% ☐ 20% ☐ 25% ☐ other (specify) _____

Range of Fuel Savings — ☐ 0% ☒ 5% ☒ 10% ☐ 15% ☐ 20% ☐ 25% ☐ other (specify) _____

2 Calculate ranges of energy and cost savings —

Range of Electrical Savings

	% Range		Annual Electrical Consumption		Range of Energy Savings	% Range		Annual Electrical Dollars Spent		Range of Electrical Dollars Savings
lower bound	0 %	x	513600 kwh	=	0 kwh,	0 %	x	$ 17847.28		$ 0
to upper bound	5 %	x	513600 kwh	=	25680 kwh,	5 %	x	$ 17847.28	=	$ 892.36

3 **Range of Fuel Savings**

	% Range		Annual Fuel Consumption		Range of Fuel Savings	% Range		Annual Fuel Dollars Spent		Range of Fuel Dollars Savings
lower bound	5 %	x	43.7×10^7 Btu	=	21.9×10^6 Btu,	5 %	x	$ 1002.99	=	$ 50.15
to upper bound	10 %	x	43.7×10^7 Btu	=	43.7×10^6 Btu,	10 %	x	$ 1002.99	=	$ 100.30

The mini-auditor is not responsible if actual savings resulting from the implementation of the energy conservation opportunities listed in section I do not fall between the roughly estimated ranges which are specified.

K

Instructions: Read through the list of energy conservation opportunities provided. As you read through the items, list below those items which have already been undertaken in your facility. The description of the past energy conservation action should contain the specific building location where the recommendation applies, if applicable. Indicate the date of implementation of each item and its classification number. Energy conserving items which have been undertaken and are not on the list provided should also be included along with their appropriate classification numbers. The classification number should be taken from the classification scheme for energy conservation opportunities listed on pages 25 through 37. *This section of the mini-audit report should be completed by building personnel prior to the walk-through by the mini-auditor.*

ITEM NO.	CLASSIFICATION NO.		PAST ENERGY CONSERVATION ACTIONS	ENERGY SAVINGS	ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS		OPTIONAL:	OPTIONAL:	

Note Reproduce this page as necessary

NEW OPPORTUNITIES

Instructions: Read through the energy conservation recommendation list provided. Then walk through the building with the list. Examine the suggested maintenance and operational changes, and any other low cost energy conservation measures, that pertain to the facility. As you go along, record the item number, the classification number of the recommendation, and the new mini-audit opportunity. The description of the mini-audit opportunity should contain the specific building location where the recommendation applies, if applicable. Any recommendation not found on the list may also be included. For those other recommendations, assign an appropriate classification number from the classification scheme for energy conservation opportunities listed on pages 25 through 37. The date of implementation should only be completed as the recommendation is implemented. *This section of the mini-audit report should be completed by the mini-audit team during the building walk-through.*

ITEM NO	CLASSIFICATION NO.		NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS OPTIONAL:	ENERGY COST SAVINGS OPTIONAL:	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS				
1	1	1	Keep all controls free of dust.			
2	1	2	Look for loose connections and bad contacts on a regular basis.			
3	1	2	Lubricate motors to reduce wear and excessive torque.			
4	1	2	Balance three-phase power sources to motors.			
5	1	2	Check for over-voltage conditions on motors.			
6	1	2	Replace worn or defective motors with motors that are sized as close to the load as possible and use the highest efficiency motors available.			
7	2	1	Check the amount of insulation in the ceiling.			
8	2	1	Add insulation, if needed.			
9	2	1	Weatherstrip all exterior doors.			
10	2	6	Inspect the roof and seal all cracks that allow outdoor air and water to enter.			
11	2	6	Modify roof openings with insulation panels.			
12	2	8	Insulate walls with rigid insulation on inside surfaces.			
13	2	10	Replace single glazed windows with double glazed thermopanes.			
14	3	1	Check the calibration of all controllers and devices for proper settings and operations.			
15	3	1	65^{o}F maximum occupied, 60^{o}F maximum unoccupied during the heating season.			
16	3	2	Overhead heaters should direct heat to floors.			
17	3	3	Inspect and lubricate brarings on fans.			
18	3	3	Inspect drive belts on fans. Adjust or replace as necessary to ensure proper operation.			
19	3	3	Make sure that all fans, frequently inoperative in unit heaters, fan coil units, and unit ventilators are running normally to increase the heat transfer rate from heating coils.			

Note 1: Date of Implementation should only be completed as the recommendation is implemented. The mini-audit report may be submitted to the Minnesota Energy Agency before the "Date of Implementation" has been completed.

Note 2: Reproduce this page as necessary.

L NEW OPPORTUNITIES

Instructions: Read through the energy conservation recommendation list provided. Then walk through the building with the list. Examine the suggested maintenance and operational changes, and any other low cost energy conservation measures, that pertain to the facility. As you go along, record the item number, the classification number of the recommendation, and the new mini-audit opportunity. The description of the mini-audit opportunity should contain the specific building location where the recommendation applies, if applicable. Any recommendation not found on the list may also be included. For those other recommendations, assign an appropriate classification number from the classification scheme for energy conservation opportunities listed on pages 25 through 37. The date of implementation should only be completed as the recommendation is implemented. *This section of the mini-audit report should be completed by the mini-audit team during the building walk-through.*

ITEM NO	CLASSIFICATION NO. MAJOR CLASS	CLASSIFICATION NO. SUB CLASS	NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS OPTIONAL:	ENERGY COST SAVINGS OPTIONAL:	DATE OF IMPLEMENTATION
20	3	3	Clean or replace filters periodically.			
21	3	3	Check belt tension and alignment on air compressor.			
22	3	3	Inspect air compressor intake filter pads and clean or replace as necessary.			
23	3	3	Check the compressor's oil level.			
24	3	3	Periodically drain the moisture from storage tank.			
25	4	4	Use lower wattage lamps to provide the necessary illumination.			
26	4	4	Allow part of a lighting system to be turned off, while maintaining the necessary light.			
27	5	1	Keep records of the operating schedule, monthly energy consumption of efficiency of the building. These records will indicate the impact of energy conservation measures.			
28	5	1	Review the record books on a regular basis.			
29	7	3	If the firing rate of gas burners is too high, it causes short cycling and excessive fuel consumption. Too low a rate requires constant operating and delivers inadequate heat to the spaces.			
30	7	4	Keep all heat exchanger surfaces clean. Check air-to-fuel ratio and adjust as necessary.			
31	7	4	Follow guidelines suggested for fan and motor maintenance.			

Note 1 Date of Implementation should only be completed as the recommendation is implemented. The mini-audit report may be submitted to the Minnesota Energy Agency before the "Date of Implementation" has been completed

Note 2 Reproduce this page as necessary

MINI-AUDIT REPORT

FORM NO. MIN-01

A — CONTACT DATA

BUILDING NAME		NAME OF ORGANIZATION	DATE
Pumping Station		City of Bloomington	5-23-80
BUILDING ADDRESS		**ADDRESS**	
9310 Poplar Bridge Road		2215 West Old Shakopee Road	
CITY	**ZIP CODE**	**CITY**	**ZIP CODE**
Bloomington, MN	55437	Bloomington, MN	55437
PERSON COMPLETING FORM	**TELEPHONE**	**CONTACT PERSON**	**TELEPHONE**
Randy Smith	(612) 935-6901	Arthur Jensen	(612) 881-5811

B — BUILDING ELIGIBILITY CODE

Instructions: For blocks 1 and 2 check the box which best fits the building ownership conditions. For block 3 determine which of the four categories describes the building type and then within the category check off the sub-category befitting the building function.

1. OWNERSHIP TYPE
   - [X] Public (PUB)
   - [ ] Non-Profit Association (NAP)

2. ULTIMATE OWNER
   - [ ] County (CNTY)
   - [X] City (CITY)
   - [ ] Township (TOWN)
   - [ ] State (STAT)
   - [ ] Public School (PUSC)
   - [ ] Private School (PRSC)
   - [ ] Non-Profit Association (NPAP)
   - [ ] Indian Tribe (INDN)

3a. SCHOOLS
   - [ ] Elementary (SCHL-ELM)
   - [ ] Secondary (SCHL-SECD)
   - [ ] Coll. or Univ. (SCHL-POST)
   - [ ] Vocational (SCHL-VOCL)
   - [ ] Education Agency (SCHL-ADMN)
   - [ ] Administration (SCHL-ADMN)
   - [ ] OTHER (SCHL-OTHR)

b. PUBLIC CARE
   - [ ] Nursing Home (PBCR-NURS)
   - [ ] Long Term Care (PBCR-TERM)
   - [ ] Rehab. Facility (PBCR-RHAB)
   - [ ] Public Health Ctr. (PBCR-HCTR)
   - [ ] Res. Child Care Ctr. (PBCR-RCCC)

c. LOCAL GOVERNMENT
   - [ ] Office (LOCG-OFFC)
   - [ ] Storage (LOCG-STRG)
   - [ ] Service (LOCG-SERV)
   - [ ] Library (LOCG-LBRY)
   - [ ] Police (LOCG-PLCE)
   - [ ] Fire (LOCG-FIRE)
   - [X] OTHER (LOCG-OTHR)

d. HOSPITALS
   - [ ] General (HOSP-GENL)
   - [ ] Tuberculosis (HOSP-TUBR)
   - [ ] OTHER (HOSP-OTHR)

C — MINI-AUDIT FUNDING REQUEST

Instructions: With reference to page 23 entitled Funding Information, determine if the facilities are eligible for both Federal and State funding or just Federal funding. then answer the questions correctly for the situation. This section must be signed and dated by the head of the organization.

If eligible for both Federal and State Funding:
Have you received a mini-audit grant before? [ ] Yes [X] No
Have you previously applied for mini-audit funding? [X] Yes [ ] No
Do you wish to apply for mini-audit funding? [ ] Yes [X] No

Date: _____

Name: _____

Signature: _____

If eligible for Federal funding only:
Have you received a mini-audit grant before? [ ] Yes [ ] No
Have you previously applied for mini-audit funding? [ ] Yes [ ] No
Do you wish to apply for mini-audit funding? [ ] Yes [ ] No
The 50% match for Federal funds will come from: (Use additional sheets if necessary.)

Date: _____

Name: _____

Signature: _____

D ENERGY REPORT CHECK-OFF

Check the type of energy report which was completed and submitted prior to this mini-audit report.

☐ Elementary School Energy Report (Form No. ED-00444-02)
☐ Secondary School Energy Report (Form No. ED-00445-02)
☒ Existing Building Energy Report (Form No. EN-00041-01)

If an energy report has not been completed previous to this mini-audit report, one must be included with this report. Elementary, secondary, and vocational schools should use form ED-00444-02 or form ED-00445-02, depending on building complexity. All other buildings should use the existing building energy report, form EN-00041-01.

E MINI-AUDIT STATEMENTS

Instructions: This section is to be completed and signed by a registered professional engineer or by a certified mini-auditor who has successfully completed the State of Minnesota's Mini-Audit Procedures Course. This section should be completed after this mini-audit report and an energy report are completed. All blanks must be filled in.

I have reviewed the energy report and/or the energy report results for this building. I found all information contained therein to be correct *OR* I have corrected any misinformation on the energy report which will be resubmitted with this mini-audit report to the Minnesota Energy Agency.

I am not directly responsible for the day to day operations of this building being audited.

I have fully disclosed my financial interests relating to this mini-audit and any energy conservation measures considered by this audit.

I have walked through this building and have found the recommendations listed in section I of this mini-audit report to be the operations and maintenance changes, and low cost energy conservation measures, which would reduce energy consumption in this building.

I have made a rough estimate, in section G, of the range of savings which may result from the implementation of all of the mini-audit opportunities listed in section I. I am not responsible if the actual savings resulting from this mini-audit do not fall within the estimated range.

Based on actual records, the energy conservation operating and maintenance procedures listed in section K did not (did, did not) save at least 20% of the building's energy consumption as specified in section I.

Based upon my observation of the physical characteristics of this building and the building's major energy using systems, I recommend that this should not (should, should not) be the subject of a maxi-audit.
I realize that this is not a final judgement, that the State reserves the right to make the maxi-audit funding determination based on this mini-audit report and other criteria.

Based upon the information in section E and the information referred to in section F, I recommend that this building should not (should, should not) undergo further solar conversion analysis, and/or should not (should, should not) undergo further analysis of the renewable resources — waste, wind, wood. (Circle proper resources)

In my judgement, as a mini-auditor, all of the above statements are true and correct.

Randy Smith
Mini-Auditor's Name (Print or Type)

Randy Smith 206
Signature

Rieke Carroll Muller Assoc., Inc.
Firm Name (if none, enter none)

P.O. Box 130 Hopkins, MN 55343
Address

(612) 935-6901
Phone

5-23-80
Date

Witnessed by:

Building Organizational Authority (Print or Type)

Signature

Date

F AUDIT TEAM

NAME	POSITION	ORGANIZATION
Randy Smith	Certified Mini-Auditor	Rieke Carroll Muller Assoc., Inc.
Reinert Ege	Maintenance Engineer	City of Bloomington

G BUILDING INFORMATION

BRIEF DESCRIPTION OF GENERAL BUILDING CONDITION (i.e. type, and function)
Good, Pumping Station

MAJOR CHANGES PLANNED WITHIN NEXT 15 YEARS (i.e. demolition, rehabilitation, conversion from one building type to another)
None

STRUCTURAL COMPONENTS OF ROOF (i.e. metal beams, wooden rafters, concrete)
Wooden Rafters

ROOFING MATERIAL (i.e. tar and gravel, shingles, tile)
Shingles

H SOLAR POTENTIAL INFORMATION

INSTRUCTIONS: Correctly answer the following questions for the building being mini-audited.

Is there open land adjacent to the building?
XX Yes ☐ No

Solar collectors need to be located in an unshaded area. Is the roof of the building and the south facing wall unshaded between the hours of 9 a.m. and 3 p.m.?
Roof: XX Yes ☐ No
South facing Wall: ☐ Yes XX No

If the roof or wall are partly shaded, what percentage of the surface is unshaded?
% of roof unshaded _____ %
% of south facing wall unshaded 80 %

What is the overall shape of the building?
☐ square XX rectangle ☐ H-shaped ☐ E-shaped ☐ other (specify) _____

Is the roof of the building flat or pitched?
☐ flat XX pitched

If pitched, what is the compass orientation of the ridgeline? East - West

If pitched, what is the angle that the roof makes with horizontal? 30 °

Are there large obstructions on the roof such as chimneys, rooms for mechanical equipment, ventilating units, water towers, etc?
☐ Yes XX No

What is the exterior facing material for the south facing wall? Face brick

What percentage of the south facing wall is glass? 10 %

Is the building's space heating equipment located within or on the building? (A no answer indicates the equipment is in a separate building.)
XX Yes ☐ No

If the space heating equipment is inside the building, where is it located?
XX Ground Floor ☐ Basement ☐ Roof ☐ Other (specify) _____

Is the building's water heating equipment located within the building? (A no answer indicates the equipment is in a separate building.)
XX Yes ☐ No

If the water heating equipment is inside the building, where is it located?
XX Ground Floor ☐ Basement ☐ Other (specify) _____

Is the water heating system a central system, does it consist of multiple units, or is it a combination of the central and multiple units?
XX Central ☐ Multiple ☐ Combination

I

Instructions: Enter the total energy used of each fuel type for the base period and the year when there was a 20% or greater energy savings. Indicate the unit of measure. Enter the appropriate conversion factor from Appendix B to convert energy usage into Btu's. Be sure to enter the fiscal years of which the data applies. Refer to pages 7 and 15 for a complete explanation of this section.

20% SAVINGS DATA

BASE PERIOD YEAR — Fiscal Year _____

ENERGY TYPE	ENERGY USAGE	CONVERSION FACTOR	BTU USAGE
Electricity			
Fuel 1			
Fuel 2			
TOTAL			

20% SAVINGS YEAR — Fiscal Year _____

ENERGY TYPE	ENERGY USAGE	CONVERSION FACTOR	BTU USAGE
Electricity			
Fuel 1			
Fuel 2			
TOTAL			

J

Instructions: This section is to be completed by the mini-auditor after the walk-thru portion of the mini-audit. First, check the appropriate boxes which state the roughly estimated range of the percent of total electrical and fuel consumption which would be saved resulting from the implementation of all of the new mini-audit opportunities listed in section L. Secondly, calculate the range of energy and cost savings by multiplying the estimated percentages by the annual electrical and fuel consumption data on the energy report.

1

Check two boxes in each category —

Range of Electrical Savings — ☒ 0% ☒ 5% ☐ 10% ☐ 15% ☐ 20% ☐ 25% ☐ other (specify) _____

Range of Fuel Savings — ☐ 0% ☒ 5% ☒ 10% ☐ 15% ☐ 20% ☐ 25% ☐ other (specify) _____

2

Calculate ranges of energy and cost savings —

Range of Electrical Savings

	% Range		Annual Electrical Consumption		Range of Energy Savings	% Range		Annual Electrical Dollars Spent		Range of Electrical Dollars Savings
lower bound	0 %	x	168638 kwh	=	0 kwh,	0 %	x	$ 4600.50	=	$ 0
to upper bound	5 %	x	168638 kwh	=	8431.9 kwh,	5 %	x	$ 4600.50	=	$ 230.03

3

Range of Fuel Savings

	% Range		Annual Fuel Consumption		Range of Fuel Savings	% Range		Annual Fuel Dollars Spent		Range of Fuel Dollars Savings
lower bound	5 %	x	36.7×10^6 Btu	=	18.4×10^5 Btu,	5 %	x	$ 884.72	=	$ 44.24
to upper bound	10 %	x	36.7×10^6 Btu	=	36.7×10^5 Btu,	10 %	x	$ 994.72	=	$ 88.47

SAVINGS ESTIMATION

The mini-auditor is not responsible if actual savings resulting from the implementation of the energy conservation opportunities listed in section I do not fall between the roughly estimated ranges which are specified.

K

Instructions. Read through the list of energy conservation opportunities provided. As you read through the items, list below those items which have already been undertaken in your facility. The description of the past energy conservation action should contain the specific building location where the recommendation applies, if applicable. Indicate the date of implementation of each item and its classification number. Energy conserving items which have been undertaken and are not on the list provided should also be included along with their appropriate classification numbers. The classification number should be taken from the classification scheme for energy conservation opportunities listed on pages 25 through 37. *This section of the mini-audit report should be completed by building personnel prior to the walk-through by the mini-auditor.*

ITEM NO	CLASSIFICATION NO		PAST ENERGY CONSERVATION ACTIONS	ENERGY SAVINGS	ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS		OPTIONAL:	OPTIONAL:	

Note: Reproduce this page as necessary

L NEW OPPORTUNITIES

Instructions: Read through the energy conservation recommendation list provided. Then walk through the building with the list. Examine the suggested maintenance and operational changes, and any other low cost energy conservation measures, that pertain to the facility. As you go along, record the item number, the classification number of the recommendation, and the new mini-audit opportunity. The description of the mini-audit opportunity should contain the specific building location where the recommendation applies, if applicable. Any recommendation not found on the list may also be included. For those other recommendations, assign an appropriate classification number from the classification scheme for energy conservation opportunities listed on pages 25 through 37. The date of implementation should only be completed as the recommendation is implemented. *This section of the mini-audit report should be completed by the mini-audit team during the building walk-through.*

ITEM NO	CLASSIFICATION NO. MAJOR CLASS	CLASSIFICATION NO. SUB CLASS	NEW MINI-AUDIT OPPORTUNITIES	OPTIONAL: ENERGY SAVINGS	OPTIONAL: ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
1	1	1	Keep all controls free of dust.			
2	1	2	Look for loose connections and bad contacts on a regular basis.			
3	1	2	Check for over-voltage conditions on motors.			
4	1	2	Check alignment of motors to driven equipment, align and tighten as necessary.			
5	1	2	Where it is impractical to replace motors which have low loads and power factors, use capacitors at motor terminals to correct the power factor to 90%.			
6	1	3	Check power factors and make adjustments to correct equipment.			
7	2	1	Check the amount of insulation in the ceiling.			
8	2	1	Add insulation in attic spaces if needed.			
9	2	2	Weatherstrip all exterior doors including garage or delivery doors.			
10	2	2	Replace an existing door with one of a higher R-value.			
11	2	8	Insulate walls with rigid insulation on inside surfaces.			
12	3	1	Check operation of entire heating/cooling control system, including control valves and dampers.			
13	3	1	Check the calibration of all controllers and devices for proper settings and operations.			
14	3	1	Raise the supply air temperature for cooling to the highest point necessary to provide minimum required cooling.			
15	3	1	Lower the supply air temperature for heating to the lowest point necessary to provide minimum required heating.			
16	3	1	65°F maximum occupied, 60°F maximum unoccupied during the heating season.			
17	3	2	Clean and remove obstructions from all room air outlets and inlets (diffusers, registers and grillers). They should be kept clean and			

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Note 2: Reproduce this page as necessary.

L NEW OPPORTUNITIES

Instructions: Read through the energy conservation recommendation list provided. Then walk through the building with the list. Examine the suggested maintenance and operational changes, and any other low cost energy conservation measures, that pertain to the facility. As you go along, record the item number, the classification number of the recommendation, and the new mini-audit opportunity. The description of the mini-audit opportunity should contain the specific building location where the recommendation applies, if applicable. Any recommendation not found on the list may also be included. For those other recommendations, assign an appropriate classification number from the classification scheme for energy conservation opportunities listed on pages 25 through 37. The date of implementation should only be completed as the recommendation is implemented. *This section of the mini-audit report should be completed by the mini-audit team during the building walk-through.*

ITEM NO.	CLASSIFICATION NO. MAJOR CLASS	CLASSIFICATION NO. SUB CLASS	NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS OPTIONAL:	ENERGY COST SAVINGS OPTIONAL:	DATE OF IMPLEMENTATION
			free of all dirt and foreign material.			
18	3	3	Inspect fans for normal operation.			
19	3	3	Inspect ductwork for air leakage. Seal all leaks by taping or caulking.			
20	3	3	Inspect ductwork insulation.			
21	3	3	Inspect damper blades and linkages. Clean, oil and adjust.			
22	3	3	Clean or replace filters periodically.			
23	4	1	Instruct occupants and maintenance personnel to switch off all lights.			
24	4	2	Clean windows.			
25	4	3	Clean fixtures and lamps regularly.			
26	4	4	Use lower wattage lamps to provide the necessary illumination.			
27	4	4	Allow part of a lighting system to be turned off, while maintaining			
			the necessary light.			
28	5	1	Keep records of the operating schedule, monthly energy consumption			
			and purchase of any new equipment that affects energy consumption of			
			efficiency of the building. These records will indicate the impact of			
			energy conservation measures.			
29	5	1	Review the record books on a regular basis.			
30	6	2	All electric heating equipment should be checked for corroded ele-			
			ments and loose connections and re- paired as required.			
31	7	3	Clean air-sides, remove soot, and scrape scale in forced warm air			
			furnaces.			
32	7	3	If the firing rate of gas or oil burners is too high, it causes short			
			cycling and excessive fuel consump- tion. Too low a rate requires			
			constant operating and delivers inadequate heat to the spaces.			

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ITEM NO.	CLASSIFICATION NO.		NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS OPTIONAL:	ENERGY COST SAVINGS OPTIONAL:	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS				
33	7	4	Maintain the lowest possible hot water temperature which will meet domestic hot water needs.			
34	7	4	Turn off gas pilots for furnaces, boilers, and space heaters during the non-heating months and during long unoccupied periods.			

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