



2 copies

MINI AUDIT

FOR THE

CITY OF BLOOMINGTON



**rieke
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architects
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planners

OCTOBER 1980

RCM JOB NO. 801704

**Minitex
Minnesota Library
Access Center**

CITY HALL
CREEKSIDE CENTER
PUBLIC WORKS ENGINEERING
PUBLIC WORKS GARAGE
PUBLIC WORKS – WESTERN MAINTENANCE GARAGE
RYAN BUILDING
RESCUE STATION
ART CENTER
HISTORICAL MUSEUM
FIRE STATION # 1
FIRE STATION # 2
FIRE STATION # 3
FIRE STATION # 4
FIRE STATION # 5
FIRE STATION # 6
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

MINI-AUDIT REPORT

FORM NO. MIN-01

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

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 <input checked="" type="checkbox"/> Public (PUB) <input type="checkbox"/> Non-Profit Association (NAP)	3a. SCHOOLS <input type="checkbox"/> Elementary (SCHL-ELM) <input type="checkbox"/> Secondary (SCHL-SECD) <input type="checkbox"/> Coll. or Univ. (SCHL-POST) <input type="checkbox"/> Vocational (SCHL-VOCL) <input type="checkbox"/> Education Agency (SCHL-ADMN) <input type="checkbox"/> Administration (SCHL-ADMN) <input type="checkbox"/> OTHER (SCHL-OTHR)	c. LOCAL GOVERNMENT <input type="checkbox"/> Office (LOGG-OFFC) <input type="checkbox"/> Storage (LOGG-STRG) <input checked="" type="checkbox"/> Service (LOGG-SERV) <input type="checkbox"/> Library (LOGG-LBRY) <input checked="" type="checkbox"/> Police (LOGG-PLCE) <input type="checkbox"/> Fire (LOGG-FIRE) <input type="checkbox"/> OTHER (LOGG-OTHR)	
2. ULTIMATE OWNER <input type="checkbox"/> County (CNTY) <input checked="" type="checkbox"/> City (CITY) <input type="checkbox"/> Township (TOWN) <input type="checkbox"/> State (STAT) <input type="checkbox"/> Public School (PUSC) <input type="checkbox"/> Private School (PRSC) <input type="checkbox"/> Non-Profit Association (NPAP) <input type="checkbox"/> Indian Tribe (INDN)	b. PUBLIC CARE <input type="checkbox"/> Nursing Home (PBCR-NURS) <input type="checkbox"/> Long Term Care (PBCR-TERM) <input type="checkbox"/> Rehab. Facility (PBCR-RHAB) <input type="checkbox"/> Public Health Ctr. (PBCR-HCTR) <input type="checkbox"/> Res. Child Care Ctr. (PBCR-RCCC)	d. HOSPITALS <input type="checkbox"/> General (HOSP-GENL) <input type="checkbox"/> Tuberculosis (HOSP-TUBR) <input type="checkbox"/> OTHER (HOSP-OTHR)		

MINI-AUDIT FUNDING REQUEST	C	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.
	<p>If eligible for both Federal and State Funding:</p> <p>Have you received a mini-audit grant before? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>Have you previously applied for mini-audit funding? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Do you wish to apply for mini-audit funding? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>Date: _____</p> <p>Name: _____</p> <p>Signature: _____</p> <p>If eligible for Federal funding only:</p> <p>Have you received a mini-audit grant before? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Have you previously applied for mini-audit funding? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Do you wish to apply for mini-audit funding? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>The 50% match for Federal funds will come from: (Use additional sheets if necessary.)</p> <p>Date: _____</p> <p>Name: _____</p> <p>Signature: _____</p>	

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 save at least 20% of the building's energy consumption as specified in section I. (did, did not)

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

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 undergo further solar conversion analysis, and/or should not undergo further analysis of the renewable resources — waste, wind, wood. (Circle proper resources) (should, should not)

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)

P0 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**

AUDIT TEAM	F	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

BUILDING INFORMATION	G	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	

SOLAR POTENTIAL INFORMATION	H	INSTRUCTIONS: Correctly answer the following questions for the building being mini-audited.
		Is there open land adjacent to the building? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No South facing Wall: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
		If the roof or wall are partly shaded, what percentage of the surface is unshaded? % of roof unshaded _____ % % of south facing wall unshaded <u>60</u> %
		What is the overall shape of the building? <input type="checkbox"/> square <input checked="" type="checkbox"/> rectangle <input type="checkbox"/> H-shaped <input type="checkbox"/> E-shaped <input type="checkbox"/> other (specify) _____
		Is the roof of the building flat or pitched? <input checked="" type="checkbox"/> flat <input type="checkbox"/> pitched
		If pitched, what is the compass orientation of the ridge line? _____
		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? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
		What is the exterior facing material for the south facing wall? <u>Face Brick</u>
		What percentage of the south facing wall is glass? <u>5</u> %
		Is the building's space heating equipment located within or on the building? (A no answer indicates the equipment is in a separate building.) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
		If the space heating equipment is inside the building, where is it located? <input type="checkbox"/> Ground Floor <input checked="" type="checkbox"/> Basement <input type="checkbox"/> Roof <input type="checkbox"/> Other (specify) _____
		Is the building's water heating equipment located within the building? (A no answer indicates the equipment is in a separate building.) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
		If the water heating equipment is inside the building, where is it located? <input type="checkbox"/> Ground Floor <input checked="" type="checkbox"/> Basement <input type="checkbox"/> 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? <input checked="" type="checkbox"/> Central <input type="checkbox"/> Multiple <input type="checkbox"/> Combination	

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			

SAVINGS ESTIMATION	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 — <input checked="" type="checkbox"/> 0% <input checked="" type="checkbox"/> 5% <input type="checkbox"/> 10% <input type="checkbox"/> 15% <input type="checkbox"/> 20% <input type="checkbox"/> 25% <input type="checkbox"/> other (specify) _____ Range of Fuel Savings — <input type="checkbox"/> 0% <input checked="" type="checkbox"/> 5% <input checked="" type="checkbox"/> 10% <input type="checkbox"/> 15% <input type="checkbox"/> 20% <input type="checkbox"/> 25% <input type="checkbox"/> other (specify) _____																																							
	2	Calculate ranges of energy and cost savings — <div style="text-align: center; font-weight: bold;">Range of Electrical Savings</div> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">% Range</td> <td></td> <td style="text-align: center;">Annual Electrical Consumption</td> <td></td> <td style="text-align: center;">Range of Energy Savings</td> <td></td> <td style="text-align: center;">% Range</td> <td></td> <td style="text-align: center;">Annual Electrical Dollars Spent</td> <td></td> <td style="text-align: center;">Range of Electrical Dollars Savings</td> </tr> <tr> <td style="text-align: center;">lower bound 0 %</td> <td style="text-align: center;">x</td> <td style="text-align: center;">1179600 kwh</td> <td style="text-align: center;">=</td> <td style="text-align: center;">0 kwh, 0 %</td> <td style="text-align: center;">x</td> <td style="text-align: center;">\$ 39421.94</td> <td style="text-align: center;">=</td> <td style="text-align: center;">\$ 0</td> </tr> <tr> <td style="text-align: center;">to</td> <td></td> <td></td> <td></td> <td style="text-align: center;">to</td> <td></td> <td></td> <td></td> <td style="text-align: center;">to</td> </tr> <tr> <td style="text-align: center;">upper bound 5 %</td> <td style="text-align: center;">x</td> <td style="text-align: center;">1179600 kwh</td> <td style="text-align: center;">=</td> <td style="text-align: center;">58980 kwh, 5 %</td> <td style="text-align: center;">x</td> <td style="text-align: center;">\$ 39421.94</td> <td style="text-align: center;">=</td> <td style="text-align: center;">\$ 1971.10</td> </tr> </table>		% 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				to				to	upper bound 5 %	x	1179600 kwh	=	58980 kwh, 5 %	x	\$ 39421.94	=	\$ 1971.10
	% Range		Annual Electrical Consumption		Range of Energy Savings		% Range		Annual Electrical Dollars Spent		Range of Electrical Dollars Savings																														
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	to				to				to																																
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	3	<div style="text-align: center; font-weight: bold;">Range of Fuel Savings</div> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">% Range</td> <td></td> <td style="text-align: center;">Annual Fuel Consumption</td> <td></td> <td style="text-align: center;">Range of Fuel Savings</td> <td></td> <td style="text-align: center;">% Range</td> <td></td> <td style="text-align: center;">Annual Fuel Dollars Spent</td> <td></td> <td style="text-align: center;">Range of Fuel Dollars Savings</td> </tr> <tr> <td style="text-align: center;">lower bound 5 %</td> <td style="text-align: center;">x</td> <td style="text-align: center;">18.2x10⁸ Btu</td> <td style="text-align: center;">=</td> <td style="text-align: center;">91.2x10⁶ Btu, 5 %</td> <td style="text-align: center;">x</td> <td style="text-align: center;">\$ 15,537.23</td> <td style="text-align: center;">=</td> <td style="text-align: center;">\$ 776.86</td> </tr> <tr> <td style="text-align: center;">to</td> <td></td> <td></td> <td></td> <td style="text-align: center;">to</td> <td></td> <td></td> <td></td> <td style="text-align: center;">to</td> </tr> <tr> <td style="text-align: center;">upper bound 10 %</td> <td style="text-align: center;">x</td> <td style="text-align: center;">18.2x10⁸ Btu</td> <td style="text-align: center;">=</td> <td style="text-align: center;">18.2x10⁷ Btu, 10 %</td> <td style="text-align: center;">x</td> <td style="text-align: center;">\$ 15,537.23</td> <td style="text-align: center;">=</td> <td style="text-align: center;">\$ 1553.72</td> </tr> </table>		% Range		Annual Fuel Consumption		Range of Fuel Savings		% Range		Annual Fuel Dollars Spent		Range of Fuel Dollars Savings	lower bound 5 %	x	18.2x10 ⁸ Btu	=	91.2x10 ⁶ Btu, 5 %	x	\$ 15,537.23	=	\$ 776.86	to				to				to	upper bound 10 %	x	18.2x10 ⁸ Btu	=	18.2x10 ⁷ Btu, 10 %	x	\$ 15,537.23	=	\$ 1553.72
	% Range		Annual Fuel Consumption		Range of Fuel Savings		% Range		Annual Fuel Dollars Spent		Range of Fuel Dollars Savings																														
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to				to				to																																	
upper bound 10 %	x	18.2x10 ⁸ Btu	=	18.2x10 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.

OPTIONAL: OPTIONAL:

ITEM NO.	CLASSIFICATION NO.		PAST ENERGY CONSERVATION ACTIONS	ENERGY SAVINGS	ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS				
1	3	3	Air conditioning - installed a chemical feeder on the condensers and water tower to prevent slime and scale build-up, thus getting better heat transfer and reducing the head pressure on the compressor.			May, 1979
2	3	3	Air conditioning - check daily to see that all spray nozzels on the water tower are open.			April, 1979 Routine Maintenance Schedule
3	3	3	Air cooled condensers - kept the condensers clean; clean them at least once a week.			April, 1979 Routine Maintenance Schedule
4	3	3	Use outside air for cooling as much as possible.			April, 1979
5	3	3	Do not run the compressors more than necessary. Most of the time they are all shut off at night, using outside air for cooling the police area.			April, 1979
6	3	3	All ventilating fans are shut off when the areas are not occupied.			April, 1979
7	3	1	Start up of compressors is staggered.			April, 1979
8	3	1	Thermostats are set at 75°. Some of the warmer areas in the building at times got up to 78° and a few times a little more but we try to keep the warmest area at no higher than 78°.			July, 1979

Note: Reproduce this page as necessary

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				
9	3	3	When the temperature is hot, we take a minimum of outside air.			April, 1979
10	3	3	Heating - boilers are being kept clean by using chemicals.			October, 1979
11	3	3	Combustion is being checked periodically with a Bacharach Flue Gas Analyzer.			October, 1979
12	3	1	Outside air is cut down to about 1500 CFM.			October, 1979
13	3	1	Heat generated by lights and people and by not taking is so much outside air. This is almost enough to heat the building when the temperature is 30° and above.			October, 1979
14	3	1	Boiler is shut off at night when the temperature is moderate.			October, 1979
15	3	1	All blowers except police area are turned off at night. When there are meetings, blowers are left on in those areas.			October, 1979
16	3	3	Efficiency of both boilers is better than 81%			October, 1979
17	3	1	Only one boiler is being run at a time and then for one (1) month each.			October, 1979
18	3	1	The thermostats are set at 65°. Some areas are warmer and very seldom are any areas any colder than 65° when they are occupied.			October, 1979

Note: Reproduce this page as necessary

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:

[illegible]

Note: Reproduce this page as necessary

ITEM NO	CLASSIFICATION NO.		NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS	ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS				
1	1	1	Keep all controls free of dust.			February, 1979
2	1	2	Eliminate excessive motor vibration.			RMS - April, 1979
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%.			Over 90% since April 1979
4	1	3	Check power factors and make adjustments to correct equipment.			RMS April, 1979
5	1	4	Shade outdoor transformer banks from solar radiation.			
6	2	1	Check the amount of insulation in the ceiling.			1.5" June, 1979
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.			RMS April, 1979
11	3	1	Check the calibration of all controllers and devices for proper settings and operations.			RMS April, 1979
12	3	1	Adjust automatic timers or add time clocks to automatically set back temperature for night and weekend operation.			Done manually
13	3	1	Raise the supply air (or chilled water) temperature for cooling to the highest point necessary to provide minimum required cooling.			May, 1979
14	3	1	Lower the supply air (or hot water) temperature for heating to the lowest point necessary to provide minimum required heating.			October, 1979
15	3	1	Turn off all humidifiers at night and during unoccupied cycles.			October, 1979
16	3	1	Control humidity to a maximum of 80% 50%.			
17	3	1	65°F maximum occupied, 60°F maximum unoccupied during the heating season.			October, 1979

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 for 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				
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.			November, 1979
20	3	2	In the public spaces of all buildings such as lobbies, corridors, stairwells, vestibules, 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.			October, 1979
21	3	3	Keep condenser coil face clean to permit proper air flow.			RMS April, 1979
22	3	3	Inspect ductwork for air leakage. Seal all leaks by taping or caulking.			
23	3	3	Inspect hot and chilled water piping strainers. Clean when required.			RMS April, 1979
24	3	3	Inspect steam traps to assure that they are passing only condensate, not steam. Repair as necessary. Inspect all pressure reducing and regulating valves and related equipment. Adjust, repair or replace as necessary.			RMS April, 1979
25	3	3	Inspect damper blades and linkages. Clean, oil and adjust.			RMS April, 1979
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.			RMS April, 1979
27	3	3	Check the timer settings and mechanism on the automatic filter.			RMS April, 1979
28	3	3	If the automatic filters are advanced according to pressure requirements, check this control for proper functioning.			RMS April, 1979

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

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				
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.			RMS April, 1979
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 ballasts.			
37	4	4	Reduce outside lighting in parking lots and at building signs and entrances to the minimum.			January, 1979
38	4	4	Use lower wattage lamps to provide the necessary illumination.			June, 1980
39	4	4	Allow part of a lighting system to be turned off, while maintaining the necessary light.			
40	4	5	Substitute small 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.			January, 1979
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 indicate the impact of			August, 1979

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				
			energy conservation measures.			
44	5	1	Review the record book on a regular basis.			August, 1979
45	6	1	Adjust water supply to 100°F for all except special requirements (dishwasher supply units, etc.)			May, 1979
46	6	2	The burner system of fossil-fuel water heaters should be kept clean and in good operating condition.			RMS April, 1979
47	6	2	Check for a defective relieve valve from the water heater.			RMS April, 1979
48	6	2	Periodically drain and remove the sediment from the water heater.			RMS April, 1979
49	7	4	Maintain the lowest possible hot water temperature which will meet space or domestic hot water needs.			May, 1979
50	7	4	Maintain water level or pressure to radiators or coils on the highest level of the building.			October, 1979
51	7	4	Maintain the lowest possible steam pressure suitable for supplying radiation or coils.			October, 1979
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.			RMS April, 1979
53	7	4	Keep the cooling tower clean to minimize both air and water pressure drop.			RMS April, 1979
54	7	4	Clean cooling tower inlet strainer.			RMS April, 1979
55	7	4	Inspect spray filled or distributed cooling towers for proper nozzle performance. Clean nozzles as necessary.			RMS April, 1979
56	7	8	Analyze cooling tower water and maintain acceptable water quality.			RMS April, 1979

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.

MINI-AUDIT REPORT

FORM NO. MIN-01

A CONTACT DATA	BUILDING NAME Creekside Center		NAME OF ORGANIZATION City of Bloomington		DATE 6-2-80	
	BUILDING ADDRESS 9801 Penn Avenue South		ADDRESS 2215 West Old Shakopee Road			
	CITY Bloomington, MN		ZIP CODE 55431		CITY Bloomington, MN	
	PERSON COMPLETING FORM Paul Martinsen		TELEPHONE (612) 935-6901		CONTACT PERSON Arthur Jensen	
				TELEPHONE (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 <input checked="" type="checkbox"/> Public (PUB) <input type="checkbox"/> Non-Profit Association (NAP)		3a. SCHOOLS <input type="checkbox"/> Elementary (SCHL-ELM) <input type="checkbox"/> Secondary (SCHL-SECD) <input type="checkbox"/> Coll. or Univ. (SCHL-POST) <input type="checkbox"/> Vocational (SCHL-VOCL) <input type="checkbox"/> Education Agency (SCHL-ADMN) <input type="checkbox"/> Administration (SCHL-ADMN) <input type="checkbox"/> OTHER (SCHL-OTHR)		c. LOCAL GOVERNMENT <input type="checkbox"/> Office (LOGG-OFFC) <input type="checkbox"/> Storage (LOGG-STRG) <input checked="" type="checkbox"/> Service (LOGG-SERV) <input type="checkbox"/> Library (LOGG-LBRY) <input type="checkbox"/> Police (LOGG-PLCE) <input type="checkbox"/> Fire (LOGG-FIRE) <input checked="" type="checkbox"/> OTHER (LOGG-OTHR)	
2. ULTIMATE OWNER <input type="checkbox"/> County (CNTY) <input checked="" type="checkbox"/> City (CITY) <input type="checkbox"/> Township (TOWN) <input type="checkbox"/> State (STAT) <input type="checkbox"/> Public School (PUSC) <input type="checkbox"/> Private School (PRSC) <input type="checkbox"/> Non-Profit Association (NPAP) <input type="checkbox"/> Indian Tribe (INDN)		b. PUBLIC CARE <input type="checkbox"/> Nursing Home (PBCR-NURS) <input type="checkbox"/> Long Term Care (PBCR-TERM) <input type="checkbox"/> Rehab. Facility (PBCR-RHAB) <input type="checkbox"/> Public Health Ctr. (PBCR-HCTR) <input type="checkbox"/> Res. Child Care Ctr. (PBCR-RCCC)		d. HOSPITALS <input type="checkbox"/> General (HOSP-GENL) <input type="checkbox"/> Tuberculosis (HOSP-TUBR) <input type="checkbox"/> 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.	
	<p>If eligible for both Federal and State Funding:</p> <p>Have you received a mini-audit grant before? Yes <input checked="" type="checkbox"/> No <input checked="" type="checkbox"/></p> <p>Have you previously applied for mini-audit funding? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Do you wish to apply for mini-audit funding? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>Date: _____</p> <p>Name: _____</p> <p>Signature: _____</p> <p>If eligible for Federal funding only:</p> <p>Have you received a mini-audit grant before? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Have you previously applied for mini-audit funding? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Do you wish to apply for mini-audit funding? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>The 50% match for Federal funds will come from: (Use additional sheets if necessary.)</p> <p>Date: _____</p> <p>Name: _____</p> <p>Signature: _____</p>	

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 save at least 20% of the building's energy consumption as specified in section I. (did, did not)

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

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 undergo further analysis of the renewable resources — waste, wind, wood. (Circle proper resources) (should, should not)

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

Building Organizational Authority (Print or Type)

Signature

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

Date

P.O. Box 130 Hopkins, MN 55343
Address

(612) 935-6901
Phone

6-2-80
Date

MINI-AUDIT
STATEMENTS

F AUDIT TEAM	NAME	POSITION	ORGANIZATION
	Paul Martisen	Mechanical Engineer	Rieka 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	INSTRUCTIONS: Correctly answer the following questions for the building being mini-audited.
SOLAR POTENTIAL INFORMATION	Is there open land adjacent to the building? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> 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: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No South facing Wall: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	If the roof or wall are partly shaded, what percentage of the surface is unshaded? % of roof unshaded <u>90</u> % % of south facing wall unshaded <u>50</u> %
	What is the overall shape of the building? <input type="checkbox"/> square <input checked="" type="checkbox"/> rectangle <input type="checkbox"/> H-shaped <input type="checkbox"/> E-shaped <input type="checkbox"/> other (specify) _____
	Is the roof of the building flat or pitched? <input checked="" type="checkbox"/> flat <input type="checkbox"/> 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? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
	What is the exterior facing material for the south facing wall? <u>Block and brick</u>
	What percentage of the south facing wall is glass? <u>50</u> %
	Is the building's space heating equipment located within or on the building? (A no answer indicates the equipment is in a separate building.) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	If the space heating equipment is inside the building, where is it located? <input type="checkbox"/> Ground Floor <input checked="" type="checkbox"/> Basement <input type="checkbox"/> Roof <input type="checkbox"/> Other (specify) _____
	Is the building's water heating equipment located within the building? (A no answer indicates the equipment is in a separate building.) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	If the water heating equipment is inside the building, where is it located? <input type="checkbox"/> Ground Floor <input checked="" type="checkbox"/> Basement <input type="checkbox"/> 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? <input checked="" type="checkbox"/> Central <input type="checkbox"/> Multiple <input type="checkbox"/> Combination	

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			

SAVINGS ESTIMATION	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 — <input checked="" type="checkbox"/> 0% <input checked="" type="checkbox"/> 5% <input type="checkbox"/> 10% <input type="checkbox"/> 15% <input type="checkbox"/> 20% <input type="checkbox"/> 25% <input type="checkbox"/> other (specify) _____ Range of Fuel Savings — <input type="checkbox"/> 0% <input checked="" type="checkbox"/> 5% <input checked="" type="checkbox"/> 10% <input type="checkbox"/> 15% <input type="checkbox"/> 20% <input type="checkbox"/> 25% <input type="checkbox"/> other (specify) _____																											
	2	Calculate ranges of energy and cost savings — <div style="text-align: center; font-weight: bold;">Range of Electrical Savings</div> <table style="width: 100%; border: none;"> <tr> <td style="text-align: center;">% Range</td> <td style="text-align: center;">Annual Electrical Consumption</td> <td style="text-align: center;">Range of Energy Savings</td> <td style="text-align: center;">% Range</td> <td style="text-align: center;">Annual Electrical Dollars Spent</td> <td style="text-align: center;">Range of Electrical Dollars Savings</td> </tr> <tr> <td>lower bound 0 %</td> <td>x 268,480 kwh</td> <td>= 0 kwh,</td> <td>0 %</td> <td>x \$10,915.28</td> <td>= \$ 0</td> </tr> <tr> <td style="text-align: center;">to</td> <td></td> <td style="text-align: center;">to</td> <td style="text-align: center;">to</td> <td></td> <td style="text-align: center;">to</td> </tr> <tr> <td>upper bound 5 %</td> <td>x 268,480 kwh</td> <td>= 13,424 kwh,</td> <td>5 %</td> <td>x \$10,915.28</td> <td>= \$ 545.76</td> </tr> </table>				% 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		to	to		to	upper bound 5 %	x 268,480 kwh	= 13,424 kwh,	5 %	x \$10,915.28	= \$ 545.76
	% Range	Annual Electrical Consumption	Range of Energy Savings	% Range	Annual Electrical Dollars Spent	Range of Electrical Dollars Savings																							
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to		to	to		to																								
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3	<div style="text-align: center; font-weight: bold;">Range of Fuel Savings</div> <table style="width: 100%; border: none;"> <tr> <td style="text-align: center;">% Range</td> <td style="text-align: center;">Annual Fuel Consumption</td> <td style="text-align: center;">Range of Fuel Savings</td> <td style="text-align: center;">% Range</td> <td style="text-align: center;">Annual Fuel Dollars Spent</td> <td style="text-align: center;">Range of Fuel Dollars Savings</td> </tr> <tr> <td>lower bound 5 %</td> <td>x 2.293x10⁹ Btu</td> <td>= 1.15x10⁸ Btu,</td> <td>5 %</td> <td>x \$ 5526.05</td> <td>= \$ 276.30</td> </tr> <tr> <td style="text-align: center;">to</td> <td></td> <td style="text-align: center;">to</td> <td style="text-align: center;">to</td> <td></td> <td style="text-align: center;">to</td> </tr> <tr> <td>upper bound 10 %</td> <td>x 2.293x10⁹ Btu</td> <td>= 2.293x10⁸ Btu,</td> <td>10 %</td> <td>x \$ 5526.05</td> <td>= \$ 552.61</td> </tr> </table>				% Range	Annual Fuel Consumption	Range of Fuel Savings	% Range	Annual Fuel Dollars Spent	Range of Fuel Dollars Savings	lower bound 5 %	x 2.293x10 ⁹ Btu	= 1.15x10 ⁸ Btu,	5 %	x \$ 5526.05	= \$ 276.30	to		to	to		to	upper bound 10 %	x 2.293x10 ⁹ Btu	= 2.293x10 ⁸ Btu,	10 %	x \$ 5526.05	= \$ 552.61	
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upper bound 10 %	x 2.293x10 ⁹ Btu	= 2.293x10 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.

OPTIONAL: OPTIONAL:

ITEM NO.	CLASSIFICATION NO.		PAST ENERGY CONSERVATION ACTIONS	ENERGY SAVINGS	ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS				
1	3	1	Outside air closed off for unit			Summer 79.
			Ventilators in rooms			
2	2	10	Storm windows added			Summer 79.
3	4	3	High efficiency ballast intalled			December, 1979
4	4	4	Low wattage fluorescent lamps installed.			December 1979
5	3	3	Air conditioning - cleaned when needed.			RMS April, 1979
6	3	3	Do not run the compressor any more than necessary.			April, 1979
7	3	1	Thermostats were not set too low.			July, 1979
8	3	1	If air conditioning was needed on weekends, it was turned on and off when it was not used.			July, 1979
9	2	10	Storm windows were installed on all windows.			November, 1979
10	2	10	Window air conditioners were removed			November, 1979
11	3	1	Thermostats in most rooms set at 71°. Variance granted.			October, 1979
12	3	1	The amount of outside air taken in was cut down. When thermostats were satisfied the fans would keep running and outside dampers would open, this has changed.			June, 1979

Note: Reproduce this page as necessary

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:

[illegible]

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.		NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS	ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS				
1	1	1	Keep all controls free of dust.			February, 1979
2	1	2	Lubricate motors to reduce wear and excessive torque.			RMS April, 1979
3	1	2	Keep motors clean to make cooling easier.			RMS April, 1979
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%.			Over 90% since April, 1979
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.			RMS October, 1979
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.			May, 1979
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.			November, 1979
16	2	11	Replace windows on the north side of the building with insulation wall panels.			

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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.		NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS	ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS				
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.			RMS April, 1979
19	3	1	Check the calibration of all controllers and devices for proper settings and operations.			RMS April, 1979
20	3	1	Adjust automatic timers or add time clocks to automatically set back temperature for night and weekend operation.			Done Manually
21	3	1	Raise the chilled water temperature for colling to the highest point necessary to provide minimum required heating.			June, 1979
22	3	1	Lower the hot water temperature for heating to the lowest point necessary to provide minimum required heating.			October, 1979
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.			May, 1979
24	3	1	Operate without fresh air ventilation when the building is unoccupied.			October, 1979
25	3	1	Reduce the amount of infiltration and outdoor air ventilation to provide only the minimum required.			October, 1979
26	3	1	Inspect outlet air filter system on controls of air compressor for proper removal of oil, moisture and dirt.			RMS April, 1979
27	3	2	Clean the air side of all direct radiators, fin tube convectors and coils to inhance heat transfer.			RMS April, 1979
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.			RMS April, 1979
29	3	3	Keep condenser coil face clean to permit proper air flow.			RMS April, 1979

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.

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:	OPTIONAL:	OPTIONAL:	OPTIONAL:
ITEM NO	CLASSIFICATION NO.		NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS	ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS				
30	3	3	Check pumps for packing wear which can cause excessive leakage. Repack to avoid excessive water wastage and shaft erosion.			RMS April, 1979
31	3	3	Inspect strainers. Clean when required.			RMS
32	3	3	Inspect damper blades and linkages. Clean, oil and adjust.			RMS
33	3	3	Clean or replace filters periodically or when indicated by filter gauges. If there are no gauges, consider installing them.			RMS
34	3	3	Clean transfer surface periodically inside and outside.			RMS
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.			March, 1979
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.			December, 1979
42	5	1	Keep records of the operating schedule, monthly energy consumption and purchase of any new equipment that affects energy consumption or efficiency of the building. These records will indicate the impact of energy conservation measures.			August, 1979
43	5	1	Review the record books on a regular basis.			August, 1979
44	5	2	Establish a specific maintenance schedule for each building to ensure that all components of the specific building operate at maximum efficiency.			RMS April, 1979
			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.

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				
45	6	1	Adjust water heater supply to 100°F for all except special requirements (dishwasher supply units, etc.).			May, 1979
46	6	2	The burner system of fossil-fuel water heaters should be kept clean and in good operating condition.			RMS
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.			October, 1979
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.			October, 1979
52	7	4	Maintain the lowest possible hot water temperature which will meet space or domestic hot water needs.			May, 1979
53	7	8	Clean water chiller water-sides, remove built-up scale.			RMS
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.			August, 1979

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.

MINI-AUDIT REPORT

FORM NO. MIN-01

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

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 <input checked="" type="checkbox"/> Public (PUB) <input type="checkbox"/> Non-Profit Association (NAP)	3a. SCHOOLS <input type="checkbox"/> Elementary (SCHL-ELM) <input type="checkbox"/> Secondary (SCHL-SECD) <input type="checkbox"/> Coll. or Univ. (SCHL-POST) <input type="checkbox"/> Vocational (SCHL-VOCL) <input type="checkbox"/> Education Agency (SCHL-ADMN) <input type="checkbox"/> Administration (SCHL-ADMN) <input type="checkbox"/> OTHER (SCHL-OTHR)	c. LOCAL GOVERNMENT <input checked="" type="checkbox"/> Office (LOCG-OFFC) <input type="checkbox"/> Storage (LOCG-STRG) <input checked="" type="checkbox"/> Service (LOCG-SERV) <input type="checkbox"/> Library (LOCG-LBRY) <input type="checkbox"/> Police (LOCG-PLCE) <input type="checkbox"/> Fire (LOCG-FIRE) <input type="checkbox"/> OTHER (LOCG-OTHR)	2. ULTIMATE OWNER <input type="checkbox"/> County (CNTY) <input checked="" type="checkbox"/> City (CITY) <input type="checkbox"/> Township (TOWN) <input type="checkbox"/> State (STAT) <input type="checkbox"/> Public School (PUSC) <input type="checkbox"/> Private School (PRSC) <input type="checkbox"/> Non-Profit Association (NPAP) <input type="checkbox"/> Indian Tribe (INDN)	b. PUBLIC CARE <input type="checkbox"/> Nursing Home (PBCR-NURS) <input type="checkbox"/> Long Term Care (PBCR-TERM) <input type="checkbox"/> Rehab. Facility (PBCR-RHAB) <input type="checkbox"/> Public Health Ctr. (PBCR-HCTR) <input type="checkbox"/> Res. Child Care Ctr. (PBCR-RCCC)

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.
	<p>If eligible for both Federal and State Funding:</p> <p>Have you received a mini-audit grant before? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p> <p>Have you previously applied for mini-audit funding? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Do you wish to apply for mini-audit funding? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>Date: _____</p> <p>Name: _____</p> <p>Signature: _____</p> <p>If eligible for Federal funding only:</p> <p>Have you received a mini-audit grant before? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Have you previously applied for mini-audit funding? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Do you wish to apply for mini-audit funding? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>The 50% match for Federal funds will come from: (Use additional sheets if necessary.)</p> <p>Date: _____</p> <p>Name: _____</p> <p>Signature: _____</p>

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 save at least 20% of the building's energy consumption as specified in section I.
 (did, did not)

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

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 undergo further analysis of the renewable resources — waste, wind, wood. (Circle proper resources)
 (should, should not)

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

Witnessed by:

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

Building Organizational Authority (Print or Type)

Signature

Date

**MINI-AUDIT
STATEMENTS**

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			

SAVINGS ESTIMATION	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 — <input checked="" type="checkbox"/> 0% <input checked="" type="checkbox"/> 5% <input type="checkbox"/> 10% <input type="checkbox"/> 15% <input type="checkbox"/> 20% <input type="checkbox"/> 25% <input type="checkbox"/> other (specify) _____ Range of Fuel Savings — <input type="checkbox"/> 0% <input checked="" type="checkbox"/> 5% <input checked="" type="checkbox"/> 10% <input type="checkbox"/> 15% <input type="checkbox"/> 20% <input type="checkbox"/> 25% <input type="checkbox"/> other (specify) _____																																											
	2	Calculate ranges of energy and cost savings —																																											
	Range of Electrical Savings																																												
	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">% Range</td> <td></td> <td style="text-align: center;">Annual Electrical Consumption</td> <td></td> <td style="text-align: center;">Range of Energy Savings</td> <td></td> <td style="text-align: center;">% Range</td> <td></td> <td style="text-align: center;">Annual Electrical Dollars Spent</td> <td></td> <td style="text-align: center;">Range of Electrical Dollars Savings</td> </tr> <tr> <td>lower bound</td> <td style="text-align: center;">0 %</td> <td>x</td> <td style="text-align: right;">138,680 kwh</td> <td>=</td> <td style="text-align: center;">0 kwh,</td> <td style="text-align: center;">0 %</td> <td>x</td> <td style="text-align: right;">\$ 5364.31</td> <td>=</td> <td style="text-align: right;">\$ 0</td> </tr> <tr> <td></td> <td style="text-align: center;">to</td> <td></td> <td></td> <td></td> <td style="text-align: center;">to</td> <td style="text-align: center;">to</td> <td></td> <td></td> <td></td> <td style="text-align: center;">to</td> </tr> <tr> <td>upper bound</td> <td style="text-align: center;">5 %</td> <td>x</td> <td style="text-align: right;">138,680 kwh</td> <td>=</td> <td style="text-align: right;">6934 kwh,</td> <td style="text-align: center;">5 %</td> <td>x</td> <td style="text-align: right;">\$ 5364.31</td> <td>=</td> <td style="text-align: right;">\$ 268.22</td> </tr> </table>		% 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				to	to				to	upper bound	5 %	x	138,680 kwh	=	6934 kwh,	5 %	x	\$ 5364.31	=
% Range		Annual Electrical Consumption		Range of Energy Savings		% Range		Annual Electrical Dollars Spent		Range of Electrical Dollars Savings																																			
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	to				to	to				to																																			
upper bound	5 %	x	138,680 kwh	=	6934 kwh,	5 %	x	\$ 5364.31	=	\$ 268.22																																			
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<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">% Range</td> <td></td> <td style="text-align: center;">Annual Fuel Consumption</td> <td></td> <td style="text-align: center;">Range of Fuel Savings</td> <td></td> <td style="text-align: center;">% Range</td> <td></td> <td style="text-align: center;">Annual Fuel Dollars Spent</td> <td></td> <td style="text-align: center;">Range of Fuel Dollars Savings</td> </tr> <tr> <td>lower bound</td> <td style="text-align: center;">5 %</td> <td>x</td> <td style="text-align: right;">9.7x10⁸ Btu</td> <td>=</td> <td style="text-align: right;">4.9x10⁷ Btu,</td> <td style="text-align: center;">5 %</td> <td>x</td> <td style="text-align: right;">\$ 2491.97</td> <td>=</td> <td style="text-align: right;">\$ 124.60</td> </tr> <tr> <td></td> <td style="text-align: center;">to</td> <td></td> <td></td> <td></td> <td style="text-align: center;">to</td> <td style="text-align: center;">to</td> <td></td> <td></td> <td></td> <td style="text-align: center;">to</td> </tr> <tr> <td>upper bound</td> <td style="text-align: center;">10 %</td> <td>x</td> <td style="text-align: right;">9.7x10⁸ Btu</td> <td>=</td> <td style="text-align: right;">9.7x10⁷ Btu,</td> <td style="text-align: center;">10 %</td> <td>x</td> <td style="text-align: right;">\$ 2491.97</td> <td>=</td> <td style="text-align: right;">\$ 249.20</td> </tr> </table>		% Range		Annual Fuel Consumption		Range of Fuel Savings		% Range		Annual Fuel Dollars Spent		Range of Fuel Dollars Savings	lower bound	5 %	x	9.7x10 ⁸ Btu	=	4.9x10 ⁷ Btu,	5 %	x	\$ 2491.97	=	\$ 124.60		to				to	to				to	upper bound	10 %	x	9.7x10 ⁸ Btu	=	9.7x10 ⁷ Btu,	10 %	x	\$ 2491.97	=	\$ 249.20
% Range		Annual Fuel Consumption		Range of Fuel Savings		% Range		Annual Fuel Dollars Spent		Range of Fuel Dollars Savings																																			
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	to				to	to				to																																			
upper bound	10 %	x	9.7x10 ⁸ Btu	=	9.7x10 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.																																													

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:

[illegible]

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.		NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS	ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS				
1	1	1	Keep all controls free of dust.			RMS
2	1	2	Lubricate motors to reduce wear and excessive torque.			RMS
3	1	2	Keep motors clean to make cooling easier.			RMS
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%.			Over 90% since July, 1979
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.			RMS
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.			RMS
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.			RMS
17	3	1	Check the calibration of all controllers and devices for proper settings and operations.			RMS
18	3	1	Adjust automatic timers or add time clocks to automatically set back			

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			<p>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.</p> <p>OPTIONAL: OPTIONAL:</p>			
ITEM NO	CLASSIFICATION NO.		NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS	ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS				
			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.			May, 1979
20	3	1	Lower the supply air temperature for heating to the lowest point necessary to provide minimum required heating.			October, 1979
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.			RMS
23	3	3	Keep condensing unit coil face clean to permit proper air flow.			RMS
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.			RMS
27	3	3	Clean or replace filters periodically.			RMS
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.			December, 1979

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.

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.		NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS	ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS				
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.			August, 1980
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.			August, 1979
39	5	1	Review the record books on a regular basis.			August, 1979
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.			April, 1979
41	6	1	Adjust domestic water supply to 100°F for all except special requirements (dishwasher supply units, etc.).			June, 1979
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.			RMS
47	7	4	Operate exhaust fans only during occupied periods.			April, 1979

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

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

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 <input checked="" type="checkbox"/> Public (PUB) <input type="checkbox"/> Non-Profit Association (NAP)		3a. SCHOOLS <input type="checkbox"/> Elementary (SCHL-ELM) <input type="checkbox"/> Secondary (SCHL-SECD) <input type="checkbox"/> Coll. or Univ. (SCHL-POST) <input type="checkbox"/> Vocational (SCHL-VOCL) <input type="checkbox"/> Education Agency (SCHL-ADMN) <input type="checkbox"/> Administration (SCHL-ADMN) <input type="checkbox"/> OTHER (SCHL-OTHR)		c. LOCAL GOVERNMENT <input type="checkbox"/> Office (LOCG-OFFC) <input type="checkbox"/> Storage (LOCG-STRG) <input checked="" type="checkbox"/> Service (LOCG-SERV) <input type="checkbox"/> Library (LOCG-LBRY) <input type="checkbox"/> Police (LOCG-PLCE) <input type="checkbox"/> Fire (LOCG-FIRE) <input type="checkbox"/> OTHER (LOCG-OTHR)	
	2. ULTIMATE OWNER <input type="checkbox"/> County (CNTY) <input checked="" type="checkbox"/> City (CITY) <input type="checkbox"/> Township (TOWN) <input type="checkbox"/> State (STAT) <input type="checkbox"/> Public School (PUSC) <input type="checkbox"/> Private School (PRSC) <input type="checkbox"/> Non-Profit Association (NPAP) <input type="checkbox"/> Indian Tribe (INDN)		b. PUBLIC CARE <input type="checkbox"/> Nursing Home (PBCR-NURS) <input type="checkbox"/> Long Term Care (PBCR-TERM) <input type="checkbox"/> Rehab. Facility (PBCR-RHAB) <input type="checkbox"/> Public Health Ctr. (PBCR-HCTR) <input type="checkbox"/> Res. Child Care Ctr. (PBCR-RCCC)		d. HOSPITALS <input type="checkbox"/> General (HOSP-GENL) <input type="checkbox"/> Tuberculosis (HOSP-TUBR) <input type="checkbox"/> OTHER (HOSP-OTHR)	

MINI-AUDIT FUNDING REQUEST	C		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.	
	<p>If eligible for both Federal and State Funding:</p> <p>Have you received a mini-audit grant before? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>Have you previously applied for mini-audit funding? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Do you wish to apply for mini-audit funding? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>Date: _____</p> <p>Name: _____</p> <p>Signature: _____</p> <p>If eligible for Federal funding only:</p> <p>Have you received a mini-audit grant before? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Have you previously applied for mini-audit funding? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Do you wish to apply for mini-audit funding? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>The 50% match for Federal funds will come from: (Use additional sheets if necessary.)</p> <p>Date: _____</p> <p>Name: _____</p> <p>Signature: _____</p>			

ENERGY REPORT CHECK-OFF

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

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

AUDIT TEAM

G	BRIEF DESCRIPTION OF GENERAL BUILDING CONDITION (i.e. type, and function)
	Good - Maintenance Garage
	MAJOR CHANGES PLANNED WITHIN NEXT 15 YEARS (i.e. demolition, rehabilitation, conversion from one building type to another)
	One half will be remodeled 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	

BUILDING INFORMATION

H	INSTRUCTIONS: Correctly answer the following questions for the building being mini-audited.
	<p>Is there open land adjacent to the building? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>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: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No South facing Wall: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>If the roof or wall are partly shaded, what percentage of the surface is unshaded? % of roof unshaded <u>90</u> % % of south facing wall unshaded <u>90</u> %</p> <p>What is the overall shape of the building? <input type="checkbox"/> square <input checked="" type="checkbox"/> rectangle <input type="checkbox"/> H-shaped <input type="checkbox"/> E-shaped <input type="checkbox"/> other (specify) _____</p> <p>Is the roof of the building flat or pitched? <input checked="" type="checkbox"/> flat <input type="checkbox"/> pitched</p> <p>If pitched, what is the compass orientation of the ridge line? _____</p> <p>If pitched, what is the angle that the roof makes with horizontal? _____°</p> <p>Are there large obstructions on the roof such as chimneys, rooms for mechanical equipment, ventilating units, water towers, etc? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>What is the exterior facing material for the south facing wall? <u>Garage doors</u></p> <p>What percentage of the south facing wall is glass? <u>20</u> %</p> <p>Is the building's space heating equipment located within or on the building? (A no answer indicates the equipment is in a separate building.) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>If the space heating equipment is inside the building, where is it located? <input checked="" type="checkbox"/> Ground Floor <input type="checkbox"/> Basement <input type="checkbox"/> Roof <input type="checkbox"/> Other (specify) _____</p> <p>Is the building's water heating equipment located within the building? (A no answer indicates the equipment is in a separate building.) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>If the water heating equipment is inside the building, where is it located? <input checked="" type="checkbox"/> Ground Floor <input type="checkbox"/> Basement <input type="checkbox"/> Other (specify) _____</p> <p>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? <input checked="" type="checkbox"/> Central <input type="checkbox"/> Multiple <input type="checkbox"/> Combination</p>

SOLAR POTENTIAL INFORMATION

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				

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

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.

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.*

ENERGY SAVINGS

**ENERGY
COST
SAVINGS**

DATE OF IMPLEMENTATION

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.		NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS	ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS				
1	1	1	Keep all controls free of dust.			RMS
2	1	2	Lubricate motors to reduce wear and excessive torque.			RMS
3	1	2	Keep motors clean to make cooling easier.			RMS
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%.			Over 90% except for December, 1979 since July, 1979 (87.88%)
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.			RMS
14	3	1	Check the calibration of all controllers and devices for proper settings and operations.			RMS
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.			May, 1979
17	3	1	Lower the supply air temperature for heating to the lowest point necessary to provide minimum required heating.			October, 1979

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.

ITEM NO	CLASSIFICATION NO.		NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS	ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS				
18	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.			
19	3	3	Inspect drive belts. Adjust or replace as necessary to ensure proper operation.			RMS
20	3	3	Keep condensing unit coil face clean to permit proper air flow.			RMS
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.			RMS
24	3	3	Check compressor belt tension and alignment.			RMS
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.			RMS
31	4	3	Clean fixtures and lamps regularly.			September, 1979
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.			April, 1980

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.

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.		NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS	ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS				
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.			July, 1980
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.			August, 1979
40	5	1	Review the record books on a regular basis.			August, 1979
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.			April, 1979
42	6	1	Adjust domestic water supply to 100°F for all except special requirements (dishwasher supply units, etc.).			June, 1979
43	6	2	The burner system of fossil-fuel water heaters should be kept clean and in good operating condition.			RMS
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.			RMS
48	7	4	Turn off gas pilots for furnaces, boilers, and space heaters during			RMS

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

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.*

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.

65

MINI-AUDIT REPORT

FORM NO. MIN-01

CONTACT DATA	BUILDING NAME Public Works - Western Maint. Garage		NAME OF ORGANIZATION City of Bloomington		DATE 6-3-80
	BUILDING ADDRESS 10500 Hampshire Avenue South		ADDRESS 2215 West Old Shakopee Road		
	CITY Bloomington, MN	ZIP CODE 55431	CITY Bloomington, MN	ZIP CODE 55431	
	PERSON COMPLETING FORM Paul Martinsen		TELEPHONE (612) 935-6901	CONTACT PERSON Arthur Jensen	

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 <input checked="" type="checkbox"/> Public (PUB) <input type="checkbox"/> Non-Profit Association (NAP)		3a. SCHOOLS <input type="checkbox"/> Elementary (SCHL-ELM) <input type="checkbox"/> Secondary (SCHL-SECD) <input type="checkbox"/> Coll. or Univ. (SCHL-POST) <input type="checkbox"/> Vocational (SCHL-VOCL) <input type="checkbox"/> Education Agency (SCHL-ADMN) <input type="checkbox"/> Administration (SCHL-ADMN) <input type="checkbox"/> OTHER (SCHL-OTHR)		c. LOCAL GOVERNMENT <input type="checkbox"/> Office (LOCG-OFFC) <input type="checkbox"/> Storage (LOCG-STRG) <input checked="" type="checkbox"/> Service (LOCG-SERV) <input type="checkbox"/> Library (LOCG-LBRY) <input type="checkbox"/> Police (LOCG-PLCE) <input type="checkbox"/> Fire (LOCG-FIRE) <input type="checkbox"/> THER (LOCG-OTHR)	
	2. ULTIMATE OWNER <input type="checkbox"/> County (CNTY) <input checked="" type="checkbox"/> City (CITY) <input type="checkbox"/> Township (TOWN) <input type="checkbox"/> State (STAT) <input type="checkbox"/> Public School (PUSC) <input type="checkbox"/> Private School (PRSC) <input type="checkbox"/> Non-Profit Association (NPAP) <input type="checkbox"/> Indian Tribe (INDN)		b. PUBLIC CARE <input type="checkbox"/> Nursing Home (PBCR-NURS) <input type="checkbox"/> Long Term Care (PBCR-TERM) <input type="checkbox"/> Rehab. Facility (PBCR-RHAB) <input type="checkbox"/> Public Health Ctr. (PBCR-HCTR) <input type="checkbox"/> Res. Child Care Ctr. (PBCR-RCCC)		d. HOSPITALS <input type="checkbox"/> General (HOSP-GENL) <input type="checkbox"/> Tuberculosis (HOSP-TUBR) <input type="checkbox"/> OTHER (HOSP-OTHR)	

MINI-AUDIT FUNDING REQUEST	C	
	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 <input type="checkbox"/> No <input checked="" type="checkbox"/> Have you previously applied for mini-audit funding? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Do you wish to apply for mini-audit funding? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
Date: _____ Name: _____ Signature: _____		
If eligible for Federal funding only: Have you received a mini-audit grant before? <input type="checkbox"/> Yes <input type="checkbox"/> No Have you previously applied for mini-audit funding? <input type="checkbox"/> Yes <input type="checkbox"/> No Do you wish to apply for mini-audit funding? <input type="checkbox"/> Yes <input type="checkbox"/> No The 50% match for Federal funds will come from: (Use additional sheets if necessary.)		
Date: _____ Name: _____ Signature: _____		

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.

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 save at least 20% of the building's energy consumption as specified in section I. (did, did not)

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

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 undergo further analysis of the renewable resources — waste, wind, wood. (Circle proper resources) (should, should not)

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 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

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?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> 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: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No South facing Wall: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> 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?	<input type="checkbox"/> square <input checked="" type="checkbox"/> rectangle <input type="checkbox"/> H-shaped <input type="checkbox"/> E-shaped <input type="checkbox"/> other (specify) _____
	Is the roof of the building flat or pitched?	<input checked="" type="checkbox"/> flat <input type="checkbox"/> 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?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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.)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	If the space heating equipment is inside the building, where is it located?	<input checked="" type="checkbox"/> Ground Floor <input type="checkbox"/> Basement <input type="checkbox"/> Roof <input type="checkbox"/> 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.)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	If the water heating equipment is inside the building, where is it located?	<input checked="" type="checkbox"/> Ground Floor <input type="checkbox"/> Basement <input type="checkbox"/> 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?	<input checked="" type="checkbox"/> Central <input type="checkbox"/> Multiple <input type="checkbox"/> Combination	

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 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.

SAVINGS ESTIMATION

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:

[illegible]

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.		NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS	ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS				
1	1	1	Keep all controls free of dust.			RMS
2	1	2	Lubricate motors to reduce wear and excessive torque.			RMS
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%.			Not metered
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.			RMS
9	3	1	Check the calibration of all controllers and devices for proper settings and operations.			RMS
10	3	1	Lower the supply air temperature for heating to the lowest point necessary to provide minimum required heating.			October, 1979
11	3	3	Clean or replace filters periodically or when indicated by filter gauges. If there are no gauges, consider installing them.			RMS
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.			RMS

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.

ITEM NO	CLASSIFICATION NO.		NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS	ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS				
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.			September, 1979
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 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.			August, 1979
24	5	1	Review the record books on a regular basis.			August, 1979
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.			April, 1979
26	6	1	Adjust water heater supply to 100°F for all except special requirements.			September, 1979
27	6	1	Check the operation of the temperature controller so overheating does not occur.			RMS
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.			RMS
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.

MINI-AUDIT REPORT

FORM NO. MIN-01

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

BUILDING ELIGIBILITY CODE	B 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 <input checked="" type="checkbox"/> Public (PUB) <input type="checkbox"/> Non-Profit Association (NAP)	2. ULTIMATE OWNER <input type="checkbox"/> County (CNTY) <input checked="" type="checkbox"/> City (CITY) <input type="checkbox"/> Township (TOWN) <input type="checkbox"/> State (STAT) <input type="checkbox"/> Public School (PUSC) <input type="checkbox"/> Private School (PRSC) <input type="checkbox"/> Non-Profit Association (NPAP) <input type="checkbox"/> Indian Tribe (INDN)	3a. SCHOOLS <input type="checkbox"/> Elementary (SCHL-ELM) <input type="checkbox"/> Secondary (SCHL-SECD) <input type="checkbox"/> Coll. or Univ. (SCHL-POST) <input type="checkbox"/> Vocational (SCHL-VOCL) <input type="checkbox"/> Education Agency (SCHL-ADMN) <input type="checkbox"/> Administration (SCHL-ADMN) <input type="checkbox"/> OTHER (SCHL-OTHR)	3b. PUBLIC CARE <input type="checkbox"/> Nursing Home (PBCR-NURS) <input type="checkbox"/> Long Term Care (PBCR-TERM) <input type="checkbox"/> Rehab. Facility (PBCR-RHAB) <input type="checkbox"/> Public Health Ctr. (PBCR-HCTR) <input type="checkbox"/> Res. Child Care Ctr. (PBCR-RCCC)	3c. LOCAL GOVERNMENT <input checked="" type="checkbox"/> Office (LOGG-OFFC) <input type="checkbox"/> Storage (LOGG-STRG) <input checked="" type="checkbox"/> Service (LOGG-SERV) <input type="checkbox"/> Library (LOGG-LBRY) <input type="checkbox"/> Police (LOGG-PLCE) <input type="checkbox"/> Fire (LOGG-FIRE) <input type="checkbox"/> OTHER (LOGG-OTHR)

MINI-AUDIT FUNDING REQUEST	C 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.
	<p>If eligible for both Federal and State Funding:</p> <p>Have you received a mini-audit grant before? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>Have you previously applied for mini-audit funding? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Do you wish to apply for mini-audit funding? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>Date: _____</p> <p>Name: _____</p> <p>Signature: _____</p> <p>If eligible for Federal funding only:</p> <p>Have you received a mini-audit grant before? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Have you previously applied for mini-audit funding? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Do you wish to apply for mini-audit funding? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>The 50% match for Federal funds will come from: (Use additional sheets if necessary.)</p> <p>Date: _____</p> <p>Name: _____</p> <p>Signature: _____</p>

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 save at least 20% of the building's energy consumption as specified in section I.
 (did, did not)

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

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 undergo further analysis of the renewable resources -- waste, wind, wood. (Circle proper resources)
 (should, should not)

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

**MINI-AUDIT
STATEMENTS**

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				

SAVINGS ESTIMATION	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 — <input checked="" type="checkbox"/> 0% <input checked="" type="checkbox"/> 5% <input type="checkbox"/> 10% <input type="checkbox"/> 15% <input type="checkbox"/> 20% <input type="checkbox"/> 25% <input type="checkbox"/> other (specify) _____ Range of Fuel Savings — <input type="checkbox"/> 0% <input checked="" type="checkbox"/> 5% <input checked="" type="checkbox"/> 10% <input type="checkbox"/> 15% <input type="checkbox"/> 20% <input type="checkbox"/> 25% <input type="checkbox"/> other (specify) _____																																												
	2	Calculate ranges of energy and cost savings — <div style="text-align: center;">Range of Electrical Savings</div> <table border="0" style="width: 100%;"> <tr> <td style="text-align: center;">% Range</td> <td></td> <td style="text-align: center;">Annual Electrical Consumption</td> <td></td> <td style="text-align: center;">Range of Energy Savings</td> <td></td> <td style="text-align: center;">% Range</td> <td></td> <td style="text-align: center;">Annual Electrical Dollars Spent</td> <td></td> <td style="text-align: center;">Range of Electrical Dollars Savings</td> </tr> <tr> <td>lower bound</td> <td style="text-align: center;">0 %</td> <td>x</td> <td style="text-align: center;">254,800 kwh</td> <td>=</td> <td style="text-align: center;">0 kwh,</td> <td style="text-align: center;">0 %</td> <td>x</td> <td style="text-align: center;">\$ 11,582.36</td> <td>=</td> <td style="text-align: center;">\$ 0</td> </tr> <tr> <td></td> <td style="text-align: center;">to</td> <td></td> <td></td> <td></td> <td style="text-align: center;">to</td> <td style="text-align: center;">to</td> <td></td> <td></td> <td></td> <td style="text-align: center;">to</td> </tr> <tr> <td>upper bound</td> <td style="text-align: center;">5 %</td> <td>x</td> <td style="text-align: center;">254,800 kwh</td> <td>=</td> <td style="text-align: center;">12,740 kwh,</td> <td style="text-align: center;">5 %</td> <td>x</td> <td style="text-align: center;">\$ 11,582.36</td> <td>=</td> <td style="text-align: center;">\$ 579.12</td> </tr> </table>	% 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
	% Range		Annual Electrical Consumption		Range of Energy Savings		% Range		Annual Electrical Dollars Spent		Range of Electrical Dollars Savings																																			
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	to				to	to				to																																				
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3	<div style="text-align: center;">Range of Fuel Savings</div> <table border="0" style="width: 100%;"> <tr> <td style="text-align: center;">% Range</td> <td></td> <td style="text-align: center;">Annual Fuel Consumption</td> <td></td> <td style="text-align: center;">Range of Fuel Savings</td> <td></td> <td style="text-align: center;">% Range</td> <td></td> <td style="text-align: center;">Annual Fuel Dollars Spent</td> <td></td> <td style="text-align: center;">Range of Fuel Dollars Savings</td> </tr> <tr> <td>lower bound</td> <td style="text-align: center;">5 %</td> <td>x</td> <td style="text-align: center;">1.0x10¹⁰ Btu</td> <td>=</td> <td style="text-align: center;">5x10⁸ Btu,</td> <td style="text-align: center;">5 %</td> <td>x</td> <td style="text-align: center;">\$ 27,188.68</td> <td>=</td> <td style="text-align: center;">\$ 1,359.43</td> </tr> <tr> <td></td> <td style="text-align: center;">to</td> <td></td> <td></td> <td></td> <td style="text-align: center;">to</td> <td style="text-align: center;">to</td> <td></td> <td></td> <td></td> <td style="text-align: center;">to</td> </tr> <tr> <td>upper bound</td> <td style="text-align: center;">10 %</td> <td>x</td> <td style="text-align: center;">1.0x10¹⁰ Btu</td> <td>=</td> <td style="text-align: center;">1.0x10⁹ Btu,</td> <td style="text-align: center;">10 %</td> <td>x</td> <td style="text-align: center;">\$ 27,188.68</td> <td>=</td> <td style="text-align: center;">\$ 2,718.87</td> </tr> </table>	% Range		Annual Fuel Consumption		Range of Fuel Savings		% Range		Annual Fuel Dollars Spent		Range of Fuel Dollars Savings	lower bound	5 %	x	1.0x10 ¹⁰ Btu	=	5x10 ⁸ Btu,	5 %	x	\$ 27,188.68	=	\$ 1,359.43		to				to	to				to	upper bound	10 %	x	1.0x10 ¹⁰ Btu	=	1.0x10 ⁹ Btu,	10 %	x	\$ 27,188.68	=	\$ 2,718.87	
% Range		Annual Fuel Consumption		Range of Fuel Savings		% Range		Annual Fuel Dollars Spent		Range of Fuel Dollars Savings																																				
lower bound	5 %	x	1.0x10 ¹⁰ Btu	=	5x10 ⁸ Btu,	5 %	x	\$ 27,188.68	=	\$ 1,359.43																																				
	to				to	to				to																																				
upper bound	10 %	x	1.0x10 ¹⁰ Btu	=	1.0x10 ⁹ Btu,	10 %	x	\$ 27,188.68	=	\$ 2,718.87																																				
	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.																																													

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.*

[illegible]

Occupancy - Fall, 1980

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.		NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS	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.			

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.

ITEM NO	CLASSIFICATION NO.		NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS	ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS				
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

ITEM NO	CLASSIFICATION NO.		NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS	ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS				
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.).			

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

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:

[illegible]

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

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

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 <input checked="" type="checkbox"/> Public (PUB) <input type="checkbox"/> Non-Profit Association (NAP)		3a. SCHOOLS <input type="checkbox"/> Elementary (SCHL-ELM) <input type="checkbox"/> Secondary (SCHL-SECD) <input type="checkbox"/> Coll. or Univ. (SCHL-POST) <input type="checkbox"/> Vocational (SCHL-VOCL) <input type="checkbox"/> Education Agency (SCHL-ADMN) <input type="checkbox"/> Administration (SCHL-ADMN) <input type="checkbox"/> OTHER (SCHL-OTHR)		c. LOCAL GOVERNMENT <input type="checkbox"/> Office (LOCG-OFFC) <input type="checkbox"/> Storage (LOCG-STRG) <input type="checkbox"/> Service (LOCG-SERV) <input type="checkbox"/> Library (LOCG-LBRY) <input type="checkbox"/> Police (LOCG-PLCE) <input type="checkbox"/> Fire (LOCG-FIRE) <input checked="" type="checkbox"/> OTHER (LOCG-OTHR)	
2. ULTIMATE OWNER <input type="checkbox"/> County (CNTY) <input checked="" type="checkbox"/> City (CITY) <input type="checkbox"/> Township (TOWN) <input type="checkbox"/> State (STAT) <input type="checkbox"/> Public School (PUSC) <input type="checkbox"/> Private School (PRSC) <input type="checkbox"/> Non-Profit Association (NPAP) <input type="checkbox"/> Indian Tribe (INDN)		b. PUBLIC CARE <input type="checkbox"/> Nursing Home (PBCR-NURS) <input type="checkbox"/> Long Term Care (PBCR-TERM) <input type="checkbox"/> Rehab. Facility (PBCR-RHAB) <input type="checkbox"/> Public Health Ctr. (PBCR-HCTR) <input type="checkbox"/> Res. Child Care Ctr. (PBCR-RCCC)		d. HOSPITALS <input type="checkbox"/> General (HOSP-GENL) <input type="checkbox"/> Tuberculosis (HOSP-TUBR) <input type="checkbox"/> OTHER (HOSP-OTHR)		

MINI-AUDIT FUNDING REQUEST	C	
	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? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Have you previously applied for mini-audit funding? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Do you wish to apply for mini-audit funding? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
Date: _____ Name: _____ Signature: _____		
If eligible for Federal funding only: Have you received a mini-audit grant before? <input type="checkbox"/> Yes <input type="checkbox"/> No Have you previously applied for mini-audit funding? <input type="checkbox"/> Yes <input type="checkbox"/> No Do you wish to apply for mini-audit funding? <input type="checkbox"/> Yes <input type="checkbox"/> 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.

F

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 save at least 20% of the building's energy consumption as specified in section I. (did, did not)

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 be the subject of a maxi-audit. (should, should not)

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 undergo further solar conversion analysis, and/or should not undergo further analysis of the renewable resources — waste, wind, wood. (Circle proper resources) (should, should not)

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

**MINI-AUDIT
STATEMENTS**

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)
	<u>Good, Storage of Rescue Vehicles</u>
	MAJOR CHANGES PLANNED WITHIN NEXT 15 YEARS (i.e. demolition, rehabilitation, conversion from one building type to another)
	<u>None</u>
	STRUCTURAL COMPONENTS OF ROOF (i.e. metal beams, wooden rafters, concrete)
	<u>Metal Beams</u>
	ROOFING MATERIAL (i.e. tar and gravel, shingles, tile)
	<u>Tar and Gravel</u>

H SOLAR POTENTIAL INFORMATION	INSTRUCTIONS: Correctly answer the following questions for the building being mini-audited.	
	Is there open land adjacent to the building?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No South facing Wall: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
	If the roof or wall are partly shaded, what percentage of the surface is unshaded?	% of roof unshaded _____ % % of south facing wall unshaded <u>20</u> %
	What is the overall shape of the building?	<input type="checkbox"/> square <input checked="" type="checkbox"/> rectangle <input type="checkbox"/> H-shaped <input type="checkbox"/> E-shaped <input type="checkbox"/> other (specify) _____
	Is the roof of the building flat or pitched?	<input checked="" type="checkbox"/> flat <input type="checkbox"/> 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?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
	What is the exterior facing material for the south facing wall?	<u>Stucco</u>
	What percentage of the south facing wall is glass?	<u>1</u> %
	Is the building's space heating equipment located within or on the building? (A no answer indicates the equipment is in a separate building.)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	If the space heating equipment is inside the building, where is it located?	<input checked="" type="checkbox"/> Ground Floor <input type="checkbox"/> Basement <input type="checkbox"/> Roof <input type="checkbox"/> Other (specify) _____
	Is the building's water heating equipment located within the building? (A no answer indicates the equipment is in a separate building.)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	If the water heating equipment is inside the building, where is it located?	<input checked="" type="checkbox"/> Ground Floor <input type="checkbox"/> Basement <input type="checkbox"/> 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?	<input checked="" type="checkbox"/> Central <input type="checkbox"/> Multiple <input type="checkbox"/> Combination	

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			

SAVINGS ESTIMATION	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 — <input checked="" type="checkbox"/> 0% <input checked="" type="checkbox"/> 5% <input type="checkbox"/> 10% <input type="checkbox"/> 15% <input type="checkbox"/> 20% <input type="checkbox"/> 25% <input type="checkbox"/> other (specify) _____ Range of Fuel Savings — <input type="checkbox"/> 0% <input checked="" type="checkbox"/> 5% <input checked="" type="checkbox"/> 10% <input type="checkbox"/> 15% <input type="checkbox"/> 20% <input type="checkbox"/> 25% <input type="checkbox"/> other (specify) _____																																										
	2	Calculate ranges of energy and cost savings — <div style="text-align: center; font-weight: bold; margin-top: 10px;">Range of Electrical Savings</div> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">% Range</td> <td></td> <td style="text-align: center;">Annual Electrical Consumption</td> <td></td> <td style="text-align: center;">Range of Energy Savings</td> <td></td> <td style="text-align: center;">% Range</td> <td></td> <td style="text-align: center;">Annual Electrical Dollars Spent</td> <td></td> <td style="text-align: center;">Range of Electrical Dollars Savings</td> </tr> <tr> <td style="text-align: center;">lower bound 0 %</td> <td style="text-align: center;">x</td> <td style="text-align: center;">8370 kwh</td> <td style="text-align: center;">=</td> <td style="text-align: center;">0 kwh,</td> <td style="text-align: center;">0 %</td> <td style="text-align: center;">x</td> <td style="text-align: center;">\$ 392.87</td> <td style="text-align: center;">=</td> <td style="text-align: center;">\$ 0</td> </tr> <tr> <td style="text-align: center;">to</td> <td></td> <td></td> <td></td> <td style="text-align: center;">to</td> <td style="text-align: center;">to</td> <td></td> <td></td> <td></td> <td style="text-align: center;">to</td> </tr> <tr> <td style="text-align: center;">upper bound 5 %</td> <td style="text-align: center;">x</td> <td style="text-align: center;">8370 kwh</td> <td style="text-align: center;">=</td> <td style="text-align: center;">418.5 kwh,</td> <td style="text-align: center;">5 %</td> <td style="text-align: center;">x</td> <td style="text-align: center;">\$ 392.87</td> <td style="text-align: center;">=</td> <td style="text-align: center;">\$ 19.64</td> </tr> </table>		% 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				to	to				to	upper bound 5 %	x	8370 kwh	=	418.5 kwh,	5 %	x	\$ 392.87	=	\$ 19.64
	% Range		Annual Electrical Consumption		Range of Energy Savings		% Range		Annual Electrical Dollars Spent		Range of Electrical Dollars Savings																																	
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3	<div style="text-align: center; font-weight: bold; margin-top: 10px;">Range of Fuel Savings</div> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">% Range</td> <td></td> <td style="text-align: center;">Annual Fuel Consumption</td> <td></td> <td style="text-align: center;">Range of Fuel Savings</td> <td></td> <td style="text-align: center;">% Range</td> <td></td> <td style="text-align: center;">Annual Fuel Dollars Spent</td> <td></td> <td style="text-align: center;">Range of Fuel Dollars Savings</td> </tr> <tr> <td style="text-align: center;">lower bound 5 %</td> <td style="text-align: center;">x</td> <td style="text-align: center;">25.2x10⁶ Btu</td> <td style="text-align: center;">=</td> <td style="text-align: center;">12.6x10⁵ Btu,</td> <td style="text-align: center;">5 %</td> <td style="text-align: center;">x</td> <td style="text-align: center;">\$ 594.51</td> <td style="text-align: center;">=</td> <td style="text-align: center;">\$ 29.73</td> </tr> <tr> <td style="text-align: center;">to</td> <td></td> <td></td> <td></td> <td style="text-align: center;">to</td> <td style="text-align: center;">to</td> <td></td> <td></td> <td></td> <td style="text-align: center;">to</td> </tr> <tr> <td style="text-align: center;">upper bound 10 %</td> <td style="text-align: center;">x</td> <td style="text-align: center;">25.2x10⁶ Btu</td> <td style="text-align: center;">=</td> <td style="text-align: center;">25.6x10⁵ Btu,</td> <td style="text-align: center;">10 %</td> <td style="text-align: center;">x</td> <td style="text-align: center;">\$ 594.51</td> <td style="text-align: center;">=</td> <td style="text-align: center;">\$ 59.45</td> </tr> </table>		% Range		Annual Fuel Consumption		Range of Fuel Savings		% Range		Annual Fuel Dollars Spent		Range of Fuel Dollars Savings	lower bound 5 %	x	25.2x10 ⁶ Btu	=	12.6x10 ⁵ Btu,	5 %	x	\$ 594.51	=	\$ 29.73	to				to	to				to	upper bound 10 %	x	25.2x10 ⁶ Btu	=	25.6x10 ⁵ Btu,	10 %	x	\$ 594.51	=	\$ 59.45	
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upper bound 10 %	x	25.2x10 ⁶ Btu	=	25.6x10 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.																																												

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.*

[illegible]

64

None Accomplished

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.		NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS	ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS				
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 loding 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°F maximum occupied, 60°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.

Note 2: Reproduce this page as necessary.

Instructions: Read through the energy conservation recommendation list provided. Then walk through the building with the list. Example: 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				
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.			August, 1979
21	5	1	Review the record books on a regular basis.			August, 1979
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

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

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 <input checked="" type="checkbox"/> Public (PUB) <input type="checkbox"/> Non-Profit Association (NAP)	3a. SCHOOLS <input type="checkbox"/> Elementary (SCHL-ELM) <input type="checkbox"/> Secondary (SCHL-SECD) <input type="checkbox"/> Coll. or Univ. (SCHL-POST) <input type="checkbox"/> Vocational (SCHL-VOCL) <input type="checkbox"/> Education Agency (SCHL-ADMN) <input type="checkbox"/> Administration (SCHL-ADMN) <input type="checkbox"/> OTHER (SCHL-OTHR)	c. LOCAL GOVERNMENT <input type="checkbox"/> Office (LOGG-OFFC) <input type="checkbox"/> Storage (LOGG-STRG) <input type="checkbox"/> Service (LOGG-SERV) <input type="checkbox"/> Library (LOGG-LBRY) <input type="checkbox"/> Police (LOGG-PLCE) <input type="checkbox"/> Fire (LOGG-FIRE) <input checked="" type="checkbox"/> OTHER (LOGG-OTHR)	2. ULTIMATE OWNER <input type="checkbox"/> County (CNTY) <input checked="" type="checkbox"/> City (CITY) <input type="checkbox"/> Township (TOWN) <input type="checkbox"/> State (STAT) <input type="checkbox"/> Public School (PUSC) <input type="checkbox"/> Private School (PRSC) <input type="checkbox"/> Non-Profit Association (NPAP) <input type="checkbox"/> Indian Tribe (INDN)
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MINI-AUDIT FUNDING REQUEST	C	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.
	<p>If eligible for both Federal and State Funding:</p> <p>Have you received a mini-audit grant before? <input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>Have you previously applied for mini-audit funding? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Do you wish to apply for mini-audit funding? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>Date: _____</p> <p>Name: _____</p> <p>Signature: _____</p> <p>If eligible for Federal funding only:</p> <p>Have you received a mini-audit grant before? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Have you previously applied for mini-audit funding? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Do you wish to apply for mini-audit funding? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>The 50% match for Federal funds will come from: (Use additional sheets if necessary.)</p> <p>Date: _____</p> <p>Name: _____</p> <p>Signature: _____</p>	

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)

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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 save at least 20% of the building's energy consumption as specified in section I.
(did, did not)

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 be the subject of a maxi-audit.
(should, should not)

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 undergo further analysis of the renewable resources — waste, wind, wood. (Circle proper resources)
(should, should not)

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

**MINI-AUDIT
STATEMENTS**

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.
	<p>Is there open land adjacent to the building? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>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: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No South facing Wall: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>If the roof or wall are partly shaded, what percentage of the surface is unshaded? % of roof unshaded _____ % % of south facing wall unshaded <u>40</u> %</p> <p>What is the overall shape of the building? <input type="checkbox"/> square <input checked="" type="checkbox"/> rectangle <input type="checkbox"/> H-shaped <input type="checkbox"/> E-shaped <input type="checkbox"/> other (specify) _____</p> <p>Is the roof of the building flat or pitched? <input checked="" type="checkbox"/> flat <input type="checkbox"/> pitched</p> <p>If pitched, what is the compass orientation of the ridgeline? _____</p> <p>If pitched, what is the angle that the roof makes with horizontal? _____°</p> <p>Are there large obstructions on the roof such as chimneys, rooms for mechanical equipment, ventilating units, water towers, etc? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>What is the exterior facing material for the south facing wall? <u>Concrete Block</u></p> <p>What percentage of the south facing wall is glass? <u>5</u> %</p> <p>Is the building's space heating equipment located within or on the building? (A no answer indicates the equipment is in a separate building.) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>If the space heating equipment is inside the building, where is it located? <input checked="" type="checkbox"/> Ground Floor <input type="checkbox"/> Basement <input type="checkbox"/> Roof <input type="checkbox"/> Other (specify) _____</p> <p>Is the building's water heating equipment located within the building? (A no answer indicates the equipment is in a separate building.) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>If the water heating equipment is inside the building, where is it located? <input checked="" type="checkbox"/> Ground Floor <input type="checkbox"/> Basement <input type="checkbox"/> Other (specify) _____</p> <p>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? <input checked="" type="checkbox"/> Central <input type="checkbox"/> Multiple <input type="checkbox"/> Combination</p>

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			

SAVINGS ESTIMATION	<p>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.</p>																								
	<p>1 Check two boxes in each category —</p> <p>Range of Electrical Savings — <input checked="" type="checkbox"/> 0% <input checked="" type="checkbox"/> 5% <input type="checkbox"/> 10% <input type="checkbox"/> 15% <input type="checkbox"/> 20% <input type="checkbox"/> 25% <input type="checkbox"/> other (specify) _____</p> <p>Range of Fuel Savings — <input type="checkbox"/> 0% <input checked="" type="checkbox"/> 5% <input checked="" type="checkbox"/> 10% <input type="checkbox"/> 15% <input type="checkbox"/> 20% <input type="checkbox"/> 25% <input type="checkbox"/> other (specify) _____</p>																								
	<p>2 Calculate ranges of energy and cost savings —</p> <p style="text-align: center;">Range of Electrical Savings</p> <table border="0"> <tr> <td>% Range</td> <td>Annual Electrical Consumption</td> <td>Range of Energy Savings</td> <td>% Range</td> <td>Annual Electrical Dollars Spent</td> <td>Range of Electrical Dollars Savings</td> </tr> <tr> <td>lower bound 0 %</td> <td>x 61380 kwh</td> <td>= 0 kwh</td> <td>0 %</td> <td>x \$ 3368.66</td> <td>= \$ 0</td> </tr> <tr> <td>to</td> <td></td> <td>to</td> <td>to</td> <td></td> <td>to</td> </tr> <tr> <td>upper bound 5 %</td> <td>x 61380 kwh</td> <td>= 3069 kwh</td> <td>5 %</td> <td>x \$ 3368.66</td> <td>= \$ 168.43</td> </tr> </table>	% 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
	% Range	Annual Electrical Consumption	Range of Energy Savings	% Range	Annual Electrical Dollars Spent	Range of Electrical Dollars Savings																			
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	to		to	to		to																			
	upper bound 5 %	x 61380 kwh	= 3069 kwh	5 %	x \$ 3368.66	= \$ 168.43																			
	<p>3</p> <p style="text-align: center;">Range of Fuel Savings</p> <table border="0"> <tr> <td>% Range</td> <td>Annual Fuel Consumption</td> <td>Range of Fuel Savings</td> <td>% Range</td> <td>Annual Fuel Dollars Spent</td> <td>Range of Fuel Dollars Savings</td> </tr> <tr> <td>lower bound 5 %</td> <td>x 69.3x10⁶ Btu</td> <td>= 34.7x10⁵ Btu</td> <td>5 %</td> <td>x \$ 1648.04</td> <td>= \$ 82.40</td> </tr> <tr> <td>to</td> <td></td> <td>to</td> <td>to</td> <td></td> <td>to</td> </tr> <tr> <td>upper bound 10 %</td> <td>x 69.3x10⁶ Btu</td> <td>= 69.3x10⁵ Btu</td> <td>10 %</td> <td>x \$ 1648.04</td> <td>= \$ 164.80</td> </tr> </table>	% Range	Annual Fuel Consumption	Range of Fuel Savings	% Range	Annual Fuel Dollars Spent	Range of Fuel Dollars Savings	lower bound 5 %	x 69.3x10 ⁶ Btu	= 34.7x10 ⁵ Btu	5 %	x \$ 1648.04	= \$ 82.40	to		to	to		to	upper bound 10 %	x 69.3x10 ⁶ Btu	= 69.3x10 ⁵ Btu	10 %	x \$ 1648.04	= \$ 164.80
	% Range	Annual Fuel Consumption	Range of Fuel Savings	% Range	Annual Fuel Dollars Spent	Range of Fuel Dollars Savings																			
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<p>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.</p>																									

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:

[illegible]

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.		NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS	ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS				
1	1	1	Keep all controls free of dust.			RMS
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.			RMS
10	3	1	Raise the supply air temperature for cooling to the highest point necessary to provide minimum required cooling.			July, 1979
11	3	1	Lower the supply air temperature for heating to the lowest point necessary to provide minimum re-required heating.			October, 1979
12	3	1	65°F maximum occupied, 60°F maximum unoccupied during the heating season.			May, 1979
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 grilles). They should be kept clean and free of all dirt and foreign materials.			RMS
15	3	3	Check for excessive noise and vibration in fans. Determine cause and correct as necessary.			RMS
16	3	3	Inspect and lubricate bearings of fan motors.			RMS
17	3	3	Inspect fans for normal operation.			RMS
18	3	3	Keep condenser coil face clean to permit proper air flow.			RMS

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				
19	3	3	Inspect ductwork for air leakage. Seal all leaks by taping or caulking.			RMS
20	3	3	Inspect damper blades and linkages. Clean, oil and adjust.			RMS
21	3	3	Clean or replace filters periodically.			RMS
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.			October, 1979
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.			August, 1979
27	5	1	Review the record books on a regular basis.			August, 1979
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.			RMS
30	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.			RMS
31	7	4	Maintain the lowest possible hot water temperature which will meet domestic hot water needs.			July, 1979
32	7	4	Turn off gas pilots for furnaces, boilers, and space heaters during the non-heating months and during long unoccupied periods.			RMS

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.

MINI-AUDIT REPORT

FORM NO. MIN-01

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

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 <input checked="" type="checkbox"/> Public (PUB) <input type="checkbox"/> Non-Profit Association (NAP)	3a. SCHOOLS <input type="checkbox"/> Elementary (SCHL-ELM) <input type="checkbox"/> Secondary (SCHL-SECD) <input type="checkbox"/> Coll. or Univ. (SCHL-POST) <input type="checkbox"/> Vocational (SCHL-VOCL) <input type="checkbox"/> Education Agency (SCHL-ADMN) <input type="checkbox"/> Administration (SCHL-ADMN) <input type="checkbox"/> OTHER (SCHL-OTHR)	c. LOCAL GOVERNMENT <input type="checkbox"/> Office (LOGG-OFFC) <input type="checkbox"/> Storage (LOGG-STRG) <input type="checkbox"/> Service (LOGG-SERV) <input type="checkbox"/> Library (LOGG-LBRY) <input type="checkbox"/> Police (LOGG-PLCE) <input type="checkbox"/> Fire (LOGG-FIRE) <input checked="" type="checkbox"/> OTHER (LOGG-OTHR)	2. ULTIMATE OWNER <input type="checkbox"/> County (CNTY) <input checked="" type="checkbox"/> City (CITY) <input type="checkbox"/> Township (TOWN) <input type="checkbox"/> State (STAT) <input type="checkbox"/> Public School (PUSC) <input type="checkbox"/> Private School (PRSC) <input type="checkbox"/> Non-Profit Association (NPAP) <input type="checkbox"/> Indian Tribe (INDN)
	b. PUBLIC CARE <input type="checkbox"/> Nursing Home (PBCR-NURS) <input type="checkbox"/> Long Term Care (PBCR-TERM) <input type="checkbox"/> Rehab. Facility (PBCR-RHAB) <input type="checkbox"/> Public Health Ctr. (PBCR-HCTR) <input type="checkbox"/> Res. Child Care Ctr. (PBCR-RCCC)	d. HOSPITALS <input type="checkbox"/> General (HOSP-GENL) <input type="checkbox"/> Tuberculosis (HOSP-TUBR) <input type="checkbox"/> OTHER (HOSP-OTHR)		

MINI-AUDIT FUNDING REQUEST	C	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.
	<p>If eligible for both Federal and State Funding:</p> <p>Have you received a mini-audit grant before? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>Have you previously applied for mini-audit funding? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Do you wish to apply for mini-audit funding? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>Date: _____</p> <p>Name: _____</p> <p>Signature: _____</p> <p>If eligible for Federal funding only.</p> <p>Have you received a mini-audit grant before? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Have you previously applied for mini-audit funding? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Do you wish to apply for mini-audit funding? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>The 50% match for Federal funds will come from: (Use additional sheets if necessary.)</p> <p>Date: _____</p> <p>Name: _____</p> <p>Signature: _____</p>	

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.

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 save at least 20% of the building's energy consumption as specified in section I.
 (did, did not)

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 be the subject of a maxi-audit.
 (should, should not)

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 undergo further solar conversion analysis, and/or should not undergo further analysis of the renewable resources -- waste, wind, wood. (Circle proper resources)
 (should, should not)

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
 Signature

206

Building Organizational Authority (Print or Type)

Signature

Rieke Carroll Muller Assoc., Inc.

Firm Name (if none, enter none)

Date

P.O. Box 130 Hopkins, MN 55343

Address

(612) 935-6901

Phone

5-23-80

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? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No South facing Wall: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
	If the roof or wall are partly shaded, what percentage of the surface is unshaded? % of roof unshaded _____ % % of south facing wall unshaded <u>80</u> %	
	What is the overall shape of the building? <input type="checkbox"/> square <input checked="" type="checkbox"/> rectangle <input type="checkbox"/> H-shaped <input type="checkbox"/> E-shaped <input type="checkbox"/> other (specify) _____	
	Is the roof of the building flat or pitched? <input type="checkbox"/> flat <input checked="" type="checkbox"/> pitched	
	If pitched, what is the compass orientation of the ridgeline? <u>North - South</u>	
	If pitched, what is the angle that the roof makes with horizontal? <u>70</u> °	
	Are there large obstructions on the roof such as chimneys, rooms for mechanical equipment, ventilating units, water towers, etc? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
	What is the exterior facing material for the south facing wall? <u>Stucco</u>	
	What percentage of the south facing wall is glass? <u>10</u> %	
	Is the building's space heating equipment located within or on the building? (A no answer indicates the equipment is in a separate building.) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
	If the space heating equipment is inside the building, where is it located? <input type="checkbox"/> Ground Floor <input checked="" type="checkbox"/> Basement <input type="checkbox"/> Roof <input type="checkbox"/> Other (specify) _____	
	Is the building's water heating equipment located within the building? (A no answer indicates the equipment is in a separate building.) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
	If the water heating equipment is inside the building, where is it located? <input type="checkbox"/> Ground Floor <input checked="" type="checkbox"/> Basement <input type="checkbox"/> 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? <input checked="" type="checkbox"/> Central <input type="checkbox"/> Multiple <input type="checkbox"/> Combination		

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			

SAVINGS ESTIMATION	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.																																													
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		Range of Fuel Savings — <input type="checkbox"/> 0% <input checked="" type="checkbox"/> 5% <input checked="" type="checkbox"/> 10% <input type="checkbox"/> 15% <input type="checkbox"/> 20% <input type="checkbox"/> 25% <input type="checkbox"/> other (specify) _____																																													
	2	Calculate ranges of energy and cost savings —																																													
		<p style="text-align: center;">Range of Electrical Savings</p> <table border="0" style="width: 100%;"> <tr> <td style="text-align: right;">% Range</td> <td></td> <td style="text-align: right;">Annual Electrical Consumption</td> <td></td> <td style="text-align: right;">Range of Energy Savings</td> <td></td> <td style="text-align: right;">% Range</td> <td></td> <td style="text-align: right;">Annual Electrical Dollars Spent</td> <td></td> <td style="text-align: right;">Range of Electrical Dollars Savings</td> </tr> <tr> <td>lower bound</td> <td>0 %</td> <td>x</td> <td>20234 kwh</td> <td>=</td> <td>0 kwh,</td> <td>0 %</td> <td>x</td> <td>\$ 833.46</td> <td>=</td> <td>\$ 0</td> </tr> <tr> <td></td> <td>to</td> <td></td> <td></td> <td></td> <td>to</td> <td>to</td> <td></td> <td></td> <td></td> <td>to</td> </tr> <tr> <td>upper bound</td> <td>5 %</td> <td>x</td> <td>20234 kwh</td> <td>=</td> <td>1011.7 kwh,</td> <td>5 %</td> <td>x</td> <td>\$ 833.46</td> <td>=</td> <td>\$ 41.67</td> </tr> </table>		% 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
	% Range		Annual Electrical Consumption		Range of Energy Savings		% Range		Annual Electrical Dollars Spent		Range of Electrical Dollars Savings																																				
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% Range		Annual Fuel Consumption		Range of Fuel Savings		% Range		Annual Fuel Dollars Spent		Range of Fuel Dollars Savings																																					
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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:

[illegible]

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.		NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS	ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS				
1	1	1	Keep all controls free of dust.			RMS
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.			RMS
6	3	1	Check the calibration of all controllers and devices for proper settings and operations.			RMS
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.			May, 1979
9	3	1	Lower the hot water temperature for heating to the lowest point necessary to provide minimum required heating.			October, 1979
10	3	1	65°F maximum occupied, 60°F maximum unoccupied during the heating season.			October, 1979
11	3	1	78°F minimum when occupied and no cooling when unoccupied during the cooling season.			May, 1979
12	3	1	Provide atmospheric cooling as long as possible.			RMS
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 or 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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NEW OPPORTUNITIES

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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				
			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.			RMS
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.			RMS
17	3	3	Keep condenser coil face clean to permit proper air flow.			RMS
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.			RMS
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.			August, 1979

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ITEM NO.	CLASSIFICATION NO.		NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS	ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS				
27	5	1	Review the record books on a regular basis.			August, 1979
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.			RMS
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.			RMS
31	7	4	Maintain the lowest possible hot water temperature which will meet space or domestic hot water needs.			June, 1979
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.			RMS
34	7	4	Turn off gas pilots for furnaces, boilers, and space heaters during the non-heating months and during long unoccupied periods.			RMS

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MINI-AUDIT REPORT

FORM NO. MIN-01

A CONTACT DATA	BUILDING NAME Fire Station #1		NAME OF ORGANIZATION City of Bloomington		DATE 5-17-80
	BUILDING ADDRESS 600 West 95th Street		ADDRESS 2215 West Old Shakopee Road		
	CITY Bloomington, MN	ZIP CODE 55420	CITY Bloomington, MN	ZIP CODE 55431	
	PERSON COMPLETING FORM Randy Smith		TELEPHONE (612) 935-6901	CONTACT PERSON Arthur Jensen	
			TELEPHONE (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.			
	<p>1. OWNERSHIP TYPE</p> <p><input checked="" type="checkbox"/> Public (PUB)</p> <p><input type="checkbox"/> Non-Profit Association (NAP)</p>	<p>3a. SCHOOLS</p> <p><input type="checkbox"/> Elementary (SCHL-ELM)</p> <p><input type="checkbox"/> Secondary (SCHL-SECD)</p> <p><input type="checkbox"/> Coll. or Univ. (SCHL-POST)</p> <p><input type="checkbox"/> Vocational (SCHL-VOCL)</p> <p><input type="checkbox"/> Education Agency (SCHL-ADMN)</p> <p><input type="checkbox"/> Administration (SCHL-ADMN)</p> <p><input type="checkbox"/> OTHER (SCHL-OTHR)</p>	<p>c. LOCAL GOVERNMENT</p> <p><input type="checkbox"/> Office (LOGG-OFFC)</p> <p><input type="checkbox"/> Storage (LOGG-STRG)</p> <p><input type="checkbox"/> Service (LOGG-SERV)</p> <p><input type="checkbox"/> Library (LOGG-LBRY)</p> <p><input type="checkbox"/> Police (LOGG-PLCE)</p> <p><input checked="" type="checkbox"/> Fire (LOGG-FIRE)</p> <p><input type="checkbox"/> OTHER (LOGG-OTHR)</p>	
	<p>2. ULTIMATE OWNER</p> <p><input type="checkbox"/> County (CNTY)</p> <p><input checked="" type="checkbox"/> City (CITY)</p> <p><input type="checkbox"/> Township (TOWN)</p> <p><input type="checkbox"/> State (STAT)</p> <p><input type="checkbox"/> Public School (PUSC)</p> <p><input type="checkbox"/> Private School (PRSC)</p> <p><input type="checkbox"/> Non-Profit Association (NPAP)</p> <p><input type="checkbox"/> Indian Tribe (INDN)</p>	<p>b. PUBLIC CARE</p> <p><input type="checkbox"/> Nursing Home (PBCR-NURS)</p> <p><input type="checkbox"/> Long Term Care (PBCR-TERM)</p> <p><input type="checkbox"/> Rehab. Facility (PBCR-RHAB)</p> <p><input type="checkbox"/> Public Health Ctr. (PBCR-HCTR)</p> <p><input type="checkbox"/> Res. Child Care Ctr. (PBCR-RCCC)</p>	<p>d. HOSPITALS</p> <p><input type="checkbox"/> General (HOSP-GENL)</p> <p><input type="checkbox"/> Tuberculosis (HOSP-TUBR)</p> <p><input type="checkbox"/> OTHER (HOSP-OTHR)</p>	

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.	
	<p>If eligible for both Federal and State Funding:</p> <p>Have you received a mini-audit grant before? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>Have you previously applied for mini-audit funding? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Do you wish to apply for mini-audit funding? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>Date: _____</p> <p>Name: _____</p> <p>Signature: _____</p> <p>If eligible for Federal funding only:</p> <p>Have you received a mini-audit grant before? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Have you previously applied for mini-audit funding? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Do you wish to apply for mini-audit funding? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>The 50% match for Federal funds will come from: (Use additional sheets if necessary.)</p> <p>Date: _____</p> <p>Name: _____</p> <p>Signature: _____</p>	

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 _____ save at least 20% of the building's energy consumption as specified in section I. (did, did not)

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 be the subject of a maxi-audit.
(should, should not)

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 undergo further analysis of the renewable resources — waste.
wind, wood. (Circle proper resources) (should, should not)

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)

Mini-Reporter's Name (Print or Type) Randy Smith 206

Signature Randy Smith

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

P.O. Box 130 Hopkins, MN 55343
Address

Phone (612) 935-6901

Date 5-17-80

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 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	INSTRUCTIONS: Correctly answer the following questions for the building being mini-audited.
SOLAR POTENTIAL INFORMATION	Is there open land adjacent to the building? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No South facing Wall: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> 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? <input checked="" type="checkbox"/> square <input type="checkbox"/> rectangle <input type="checkbox"/> H-shaped <input type="checkbox"/> E-shaped <input type="checkbox"/> other (specify) _____
	Is the roof of the building flat or pitched? <input checked="" type="checkbox"/> flat <input type="checkbox"/> 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? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	What is the exterior facing material for the south facing wall? <u>Face brick</u>
	What percentage of the south facing wall is glass? <u>5</u> %
	Is the building's space heating equipment located within or on the building? (A no answer indicates the equipment is in a separate building.) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	If the space heating equipment is inside the building, where is it located? <input type="checkbox"/> Ground Floor <input checked="" type="checkbox"/> Basement <input checked="" type="checkbox"/> Roof <input type="checkbox"/> Other (specify) _____
	Is the building's water heating equipment located within the building? (A no answer indicates the equipment is in a separate building.) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	If the water heating equipment is inside the building, where is it located? <input checked="" type="checkbox"/> Ground Floor <input type="checkbox"/> Basement <input type="checkbox"/> 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? <input checked="" type="checkbox"/> Central <input type="checkbox"/> Multiple <input type="checkbox"/> Combination

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			

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
to		to	to		to
upper bound 5 %	x 87120 kwh	= 4356 kwh	5 %	x \$ 3187.93	= \$ 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
to		to	to		to
upper bound 10 %	x 18.6×10^7 Btu	= 18.6×10^6 Btu	10 %	x \$ 4158.57	= \$ 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.

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:

[illegible]

Note Reproduce this page as necessary

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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				
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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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.		NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS	ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS				
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 grilles). 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	Inspect drive belts. Adjust or replace as necessary to ensure proper operation.			
23	3	3	Inspect fans for normal operation.			RMS
24	3	3	Keep condenser coil face clean to permit proper air flow.			RMS
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.			RMS
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.			RMS
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.			RMS
33	3	3	Keep air intake louvers, filters and controls clear of air cond. units.			

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NEW OPPORTUNITIES			<p>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.</p> <p>OPTIONAL: OPTIONAL:</p>			
ITEM NO.	CLASSIFICATION NO.		NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS	ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS				
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.			August, 1979
43	5	1	Review the record books on a regular basis.			August, 1979
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.			RMS

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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:

[illegible]

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Note 2: Reproduce this page as necessary.

MINI-AUDIT REPORT

FORM NO. MIN-01

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

BUILDING ELIGIBILITY CODE	B 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 <input checked="" type="checkbox"/> Public (PUB) <input type="checkbox"/> Non-Profit Association (NAP)		3a. SCHOOLS <input type="checkbox"/> Elementary (SCHL-ELM) <input type="checkbox"/> Secondary (SCHL-SECD) <input type="checkbox"/> Coll. or Univ. (SCHL-POST) <input type="checkbox"/> Vocational (SCHL-VOCL) <input type="checkbox"/> Education Agency (SCHL-ADMN) <input type="checkbox"/> Administration (SCHL-ADMN) <input type="checkbox"/> OTHER (SCHL-OTHR)		c. LOCAL GOVERNMENT <input type="checkbox"/> Office (LOGG-OFFC) <input type="checkbox"/> Storage (LOGG-STRG) <input type="checkbox"/> Service (LOGG-SERV) <input type="checkbox"/> Library (LOGG-LBRY) <input type="checkbox"/> Police (LOGG-PLCE) <input checked="" type="checkbox"/> Fire (LOGG-FIRE) <input type="checkbox"/> OTHER (LOGG-OTHR)	
	2. ULTIMATE OWNER <input type="checkbox"/> County (CNTY) <input checked="" type="checkbox"/> City (CITY) <input type="checkbox"/> Township (TOWN) <input type="checkbox"/> State (STAT) <input type="checkbox"/> Public School (PUSC) <input type="checkbox"/> Private School (PRSC) <input type="checkbox"/> Non-Profit Association (NPAP) <input type="checkbox"/> Indian Tribe (INDN)		b. PUBLIC CARE <input type="checkbox"/> Nursing Home (PBCR-NURS) <input type="checkbox"/> Long Term Care (PBCR-TERM) <input type="checkbox"/> Rehab. Facility (PBCR-RHAB) <input type="checkbox"/> Public Health Ctr. (PBCR-HCTR) <input type="checkbox"/> Res. Child Care Ctr. (PBCR-RCCC)		d. HOSPITALS <input type="checkbox"/> General (HOSP-GENL) <input type="checkbox"/> Tuberculosis (HOSP-TUBR) <input type="checkbox"/> OTHER (HOSP-OTHR)	

MINI-AUDIT FUNDING REQUEST	C 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.	
	<p>If eligible for both Federal and State Funding:</p> <p>Have you received a mini-audit grant before? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>Have you previously applied for mini-audit funding? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Do you wish to apply for mini-audit funding? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>Date: _____</p> <p>Name: _____</p> <p>Signature: _____</p> <p>If eligible for Federal funding only:</p> <p>Have you received a mini-audit grant before? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Have you previously applied for mini-audit funding? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Do you wish to apply for mini-audit funding? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>The 50% match for Federal funds will come from: (Use additional sheets if necessary.)</p> <p>Date: _____</p> <p>Name: _____</p> <p>Signature: _____</p>	

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 save at least 20% of the building's energy consumption as specified in section I. (did, did not)

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 be the subject of a maxi-audit. (should, should not)

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 undergo further analysis of the renewable resources — waste, wind, wood. (Circle proper resources) (should, should not)

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

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

5-17-80

Date

Building Organizational Authority (Print or Type)

Signature

Date

**MINI-AUDIT
STATEMENTS**

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

AUDIT TEAM

G	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	

BUILDING INFORMATION

H	INSTRUCTIONS: Correctly answer the following questions for the building being mini-audited.
	Is there open land adjacent to the building? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No South facing Wall: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> 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? <input checked="" type="checkbox"/> square <input type="checkbox"/> rectangle <input type="checkbox"/> H-shaped <input type="checkbox"/> E-shaped <input type="checkbox"/> other (specify) _____
	Is the roof of the building flat or pitched? <input checked="" type="checkbox"/> flat <input type="checkbox"/> 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? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
	What is the exterior facing material for the south facing wall? <u>Face brick and wood</u>
	What percentage of the south facing wall is glass? <u>0</u> %
	Is the building's space heating equipment located within or on the building? (A no answer indicates the equipment is in a separate building.) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	If the space heating equipment is inside the building, where is it located? <input checked="" type="checkbox"/> Ground Floor <input type="checkbox"/> Basement <input type="checkbox"/> Roof <input type="checkbox"/> Other (specify) _____
	Is the building's water heating equipment located within the building? (A no answer indicates the equipment is in a separate building.) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	If the water heating equipment is inside the building, where is it located? <input checked="" type="checkbox"/> Ground Floor <input type="checkbox"/> Basement <input type="checkbox"/> 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? <input checked="" type="checkbox"/> Central <input type="checkbox"/> Multiple <input type="checkbox"/> Combination	

SOLAR POTENTIAL INFORMATION

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 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

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

3 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.

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.		NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS	ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS				
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	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 cavities.			
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.			RMS
9	3	1	Check the calibration of all controllers and devices for proper settings and operations.			RMS
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.			RMS
15	3	3	Inspect and lubricate bearings of fan motors.			RMS
16	3	3	Inspect drive belts. Adjust or replace as necessary to ensure proper operation.			RMS
17	3	3	Inspect fans for normal operation.			RMS

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NEW OPPORTUNITIES

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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				
18	3	3	Keep condenser coil face clean to permit proper air flow.			RMS
19	3	3	Inspect damper blades and linkages. Clean, oil and adjust.			RMS
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.			August, 1979
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.			RMS
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.			RMS

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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.*

[illegible]

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Note 2: Reproduce this page as necessary.

MINI-AUDIT REPORT

FORM NO. MIN-01

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

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 <input checked="" type="checkbox"/> Public (PUB) <input type="checkbox"/> Non-Profit Association (NAP)	3a. SCHOOLS <input type="checkbox"/> Elementary (SCHL-ELM) <input type="checkbox"/> Secondary (SCHL-SECD) <input type="checkbox"/> Coll. or Univ. (SCHL-POST) <input type="checkbox"/> Vocational (SCHL-VOCL) <input type="checkbox"/> Education Agency (SCHL-ADMN) <input type="checkbox"/> Administration (SCHL-ADMN) <input type="checkbox"/> OTHER (SCHL-OTHR)	c. LOCAL GOVERNMENT <input type="checkbox"/> Office (LOGG-OFFC) <input type="checkbox"/> Storage (LOGG-STRG) <input type="checkbox"/> Service (LOGG-SERV) <input type="checkbox"/> Library (LOGG-LBRY) <input type="checkbox"/> Police (LOGG-PLCE) <input checked="" type="checkbox"/> Fire (LOGG-FIRE) <input type="checkbox"/> OTHER (LOGG-OTHR)	2. ULTIMATE OWNER <input type="checkbox"/> County (CNTY) <input checked="" type="checkbox"/> City (CITY) <input type="checkbox"/> Township (TOWN) <input type="checkbox"/> State (STAT) <input type="checkbox"/> Public School (PUSC) <input type="checkbox"/> Private School (PRSC) <input type="checkbox"/> Non-Profit Association (NPAP) <input type="checkbox"/> Indian Tribe (INDN)
	b. PUBLIC CARE <input type="checkbox"/> Nursing Home (PBCR-NURS) <input type="checkbox"/> Long Term Care (PBCR-TERM) <input type="checkbox"/> Rehab. Facility (PBCR-RHAB) <input type="checkbox"/> Public Health Ctr. (PBCR-HCTR) <input type="checkbox"/> Res. Child Care Ctr. (PBCR-RCCC)	d. HOSPITALS <input type="checkbox"/> General (HOSP-GENL) <input type="checkbox"/> Tuberculosis (HOSP-TUBR) <input type="checkbox"/> OTHER (HOSP-OTHR)		

MINI-AUDIT FUNDING REQUEST	C	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.
	<p>If eligible for both Federal and State Funding:</p> <p>Have you received a mini-audit grant before? .Yes <input checked="" type="checkbox"/> No <input checked="" type="checkbox"/></p> <p>Have you previously applied for mini-audit funding? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input checked="" type="checkbox"/></p> <p>Do you wish to apply for mini-audit funding? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input checked="" type="checkbox"/></p> <p>Date: _____</p> <p>Name: _____</p> <p>Signature: _____</p> <p>If eligible for Federal funding only:</p> <p>Have you received a mini-audit grant before? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Have you previously applied for mini-audit funding? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Do you wish to apply for mini-audit funding? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>The 50% match for Federal funds will come from: (Use additional sheets if necessary.)</p> <p>Date: _____</p> <p>Name: _____</p> <p>Signature: _____</p>	

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 save at least 20% of the building's energy consumption as specified in section I. (did, did not)

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 be the subject of a maxi-audit. (should, should not)

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 undergo further solar conversion analysis, and/or should not undergo further analysis of the renewable resources — waste, wind, wood. (Circle proper resources) (should, should not)

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)

P0 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	
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? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No South facing Wall: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> 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? <input type="checkbox"/> square <input checked="" type="checkbox"/> rectangle <input type="checkbox"/> H-shaped <input type="checkbox"/> E-shaped <input type="checkbox"/> other (specify) _____
	Is the roof of the building flat or pitched? <input checked="" type="checkbox"/> flat <input type="checkbox"/> 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? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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.) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	If the space heating equipment is inside the building, where is it located? <input checked="" type="checkbox"/> Ground Floor <input type="checkbox"/> Basement <input type="checkbox"/> Roof <input type="checkbox"/> Other (specify) _____
	Is the building's water heating equipment located within the building? (A no answer indicates the equipment is in a separate building.) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	If the water heating equipment is inside the building, where is it located? <input checked="" type="checkbox"/> Ground Floor <input type="checkbox"/> Basement <input type="checkbox"/> 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? <input checked="" type="checkbox"/> Central <input type="checkbox"/> Multiple <input type="checkbox"/> Combination	

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	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 — <input checked="" type="checkbox"/> 0% <input checked="" type="checkbox"/> 5% <input type="checkbox"/> 10% <input type="checkbox"/> 15% <input type="checkbox"/> 20% <input type="checkbox"/> 25% <input type="checkbox"/> other (specify) _____ Range of Fuel Savings — <input type="checkbox"/> 0% <input checked="" type="checkbox"/> 5% <input checked="" type="checkbox"/> 10% <input type="checkbox"/> 15% <input type="checkbox"/> 20% <input type="checkbox"/> 25% <input type="checkbox"/> other (specify) _____																																																
	2	Calculate ranges of energy and cost savings — <div style="text-align: center;">Range of Electrical Savings</div> <table border="0" style="width: 100%;"> <tr> <td style="text-align: center;">% Range</td> <td></td> <td style="text-align: center;">Annual Electrical Consumption</td> <td></td> <td style="text-align: center;">Range of Energy Savings</td> <td></td> <td style="text-align: center;">% Range</td> <td></td> <td style="text-align: center;">Annual Electrical Dollars Spent</td> <td></td> <td style="text-align: center;">Range of Electrical Dollars Savings</td> </tr> <tr> <td>lower bound</td> <td>0 %</td> <td>x</td> <td>61874 kwh</td> <td>=</td> <td>0 kwh,</td> <td>0 %</td> <td>x</td> <td>\$ 2423.84</td> <td>=</td> <td>\$ 0</td> </tr> <tr> <td></td> <td>to</td> <td></td> <td></td> <td></td> <td>to</td> <td>to</td> <td></td> <td></td> <td></td> <td>to</td> </tr> <tr> <td>upper bound</td> <td>5 %</td> <td>x</td> <td>61874 kwh</td> <td>=</td> <td>3093.7 kwh,</td> <td>5 %</td> <td>x</td> <td>\$ 2423.84</td> <td>=</td> <td>\$ 121.19</td> </tr> </table>					% 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				to	to				to	upper bound	5 %	x	61874 kwh	=	3093.7 kwh,	5 %	x	\$ 2423.84	=	\$ 121.19
	% Range		Annual Electrical Consumption		Range of Energy Savings		% Range		Annual Electrical Dollars Spent		Range of Electrical Dollars Savings																																							
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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.																																																	

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.		NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS	ENERGY COST SAVINGS	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 cavities.			
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.			RMS
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.			RMS

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

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ITEM NO	CLASSIFICATION NO		NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS	ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS				
17	3	3	Inspect drive belts. Adjust or replace as necessary to ensure proper operation.			None
18	3	3	Inspect fans for normal operation.			RMS
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.			RMS
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.			August, 1979
30	5	1	Review the record books on a regular basis.			August, 1979

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Note 2: Reproduce this page as necessary.

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				
31	6	2	The burner system of fossil-fuel water heaters should be kept clean and in good operating condition.			RMS
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.			None
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.			None
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.			None
37	7	4	Turn off gas pilots for furnaces, boilers, and space heaters during the non-heating months and during long unoccupied periods.			RMS
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.			

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Note 2: Reproduce this page as necessary.

MINI-AUDIT REPORT

FORM NO. MIN-01

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

BUILDING ELIGIBILITY CODE	B 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 <input checked="" type="checkbox"/> Public (PUB) <input type="checkbox"/> Non-Profit Association (NAP)	3a. SCHOOLS <input type="checkbox"/> Elementary (SCHL-ELM) <input type="checkbox"/> Secondary (SCHL-SECD) <input type="checkbox"/> Coll. or Univ. (SCHL-POST) <input type="checkbox"/> Vocational (SCHL-VOCL) <input type="checkbox"/> Education Agency (SCHL-ADMN) <input type="checkbox"/> Administration (SCHL-ADMN) <input type="checkbox"/> OTHER (SCHL-OTHR)	c. LOCAL GOVERNMENT <input type="checkbox"/> Office (LOGG-OFFC) <input type="checkbox"/> Storage (LOGG-STRG) <input type="checkbox"/> Service (LOGG-SERV) <input type="checkbox"/> Library (LOGG-LBRY) <input type="checkbox"/> Police (LOGG-PLCE) <input checked="" type="checkbox"/> Fire (LOGG-FIRE) <input type="checkbox"/> OTHER (LOGG-OTHR)	2. ULTIMATE OWNER <input type="checkbox"/> County (CNTY) <input checked="" type="checkbox"/> City (CITY) <input type="checkbox"/> Township (TOWN) <input type="checkbox"/> State (STAT) <input type="checkbox"/> Public School (PUSC) <input type="checkbox"/> Private School (PRSC) <input type="checkbox"/> Non-Profit Association (NPAP) <input type="checkbox"/> Indian Tribe (INDN)
	b. PUBLIC CARE <input type="checkbox"/> Nursing Home (PBCR-NURS) <input type="checkbox"/> Long Term Care (PBCR-TERM) <input type="checkbox"/> Rehab. Facility (PBCR-RHAB) <input type="checkbox"/> Public Health Ctr. (PBCR-HCTR) <input type="checkbox"/> Res. Child Care Ctr. (PBCR-RCCC)	d. HOSPITALS <input type="checkbox"/> General (HOSP-GENL) <input type="checkbox"/> Tuberculosis (HOSP-TUBR) <input type="checkbox"/> OTHER (HOSP-OTHR)		

MINI-AUDIT FUNDING REQUEST	C 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.
	<p>If eligible for both Federal and State Funding:</p> <p>Have you received a mini-audit grant before? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>Have you previously applied for mini-audit funding? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Do you wish to apply for mini-audit funding? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>Date: _____</p> <p>Name: _____</p> <p>Signature: _____</p> <p>If eligible for Federal funding only:</p> <p>Have you received a mini-audit grant before? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Have you previously applied for mini-audit funding? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Do you wish to apply for mini-audit funding? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>The 50% match for Federal funds will come from: (Use additional sheets if necessary.)</p> <p>Date: _____</p> <p>Name: _____</p> <p>Signature: _____</p>

DENERGY 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)

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E

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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 undergo further analysis of the renewable resources — waste, wind, wood. (Circle proper resources) (should, should not)

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

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

5-17-80

Date

Building Organizational Authority (Print or Type)

Signature

Date

MINI-AUDIT
STATEMENTS

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

AUDIT TEAM

G	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)
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Concrete Plank	
ROOFING MATERIAL (i.e. tar and gravel, shingles, tile)	
Tar & Gravel	

BUILDING INFORMATION

H	INSTRUCTIONS: Correctly answer the following questions for the building being mini-audited.
	Is there open land adjacent to the building? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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 <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No South facing Wall: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> 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? <input checked="" type="checkbox"/> Square <input type="checkbox"/> rectangle <input type="checkbox"/> H-shaped <input type="checkbox"/> E-shaped <input type="checkbox"/> other (specify) _____
	Is the roof of the building flat or pitched? <input checked="" type="checkbox"/> flat <input type="checkbox"/> 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? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
	What is the exterior facing material for the south facing wall? <u>Face brick and wood.</u>
	What percentage of the south facing wall is glass? <u>3</u> %
	Is the building's space heating equipment located within or on the building? (A no answer indicates the equipment is in a separate building) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	If the space heating equipment is inside the building, where is it located? <input checked="" type="checkbox"/> Ground Floor <input type="checkbox"/> Basement <input type="checkbox"/> Roof <input type="checkbox"/> Other (specify) _____
	Is the building's water heating equipment located within the building? (A no answer indicates the equipment is in a separate building) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	If the water heating equipment is inside the building, where is it located? <input checked="" type="checkbox"/> Ground Floor <input type="checkbox"/> Basement <input type="checkbox"/> 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? <input checked="" type="checkbox"/> Central <input type="checkbox"/> Multiple <input type="checkbox"/> Combination	

SOLAR POTENTIAL INFORMATION

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			

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.

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.		NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS	ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS				
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 cavities.			
7	2	10	Replace single glazed windows with double glazed thermopanes.			RMS
8	3	1	Check operation of entire heating/cooling control system, including valves and dampers.			RMS
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.			RMS
15	3	3	Inspect and lubricate bearings of fan motors.			RMS
16	3	3	Inspect drive belts. Adjust or replace as necessary to ensure proper operation.			RMS

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				
17	3	3	Inspect fans for normal operation.			RMS
18	3	3	Keep condenser coil face clean to permit proper air flow.			RMS
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 purchase of any new equipment that affects energy consumption of efficiency of the building. These records will indicate the impact of energy conservation measures.			August, 1979
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 condttion.			
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.

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.*

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MINI-AUDIT REPORT

FORM NO. MIN-01

CONTACT DATA	BUILDING NAME Fire Station #5		NAME OF ORGANIZATION City of Bloomington		DATE 5-17-80
	BUILDING ADDRESS 10540 Bush Lake Road		ADDRESS 2215 West Old Shakopee Road		
	CITY Bloomington, MN	ZIP CODE 55438	CITY Bloomington, MN	ZIP CODE 55431	
	PERSON COMPLETING FORM Randy Smith		TELEPHONE (612) 935-6901	CONTACT PERSON Arthur Jensen	

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 <input checked="" type="checkbox"/> Public (PUB) <input type="checkbox"/> Non-Profit Association (NAP)		3a. SCHOOLS <input type="checkbox"/> Elementary (SCHL-ELM) <input type="checkbox"/> Secondary (SCHL-SECD) <input type="checkbox"/> Coll. or Univ. (SCHL-POST) <input type="checkbox"/> Vocational (SCHL-VOCL) <input type="checkbox"/> Education Agency (SCHL-ADMN) <input type="checkbox"/> Administration (SCHL-ADMN) <input type="checkbox"/> OTHER (SCHL-OTHR)		c. LOCAL GOVERNMENT <input type="checkbox"/> Office (LOGG-OFFC) <input type="checkbox"/> Storage (LOGG-STRG) <input type="checkbox"/> Service (LOGG-SERV) <input type="checkbox"/> Library (LOGG-LBRY) <input type="checkbox"/> Police (LOGG-PLCE) <input checked="" type="checkbox"/> Fire (LOGG-FIRE) <input type="checkbox"/> OTHER (LOGG-OTHR)	
	2. ULTIMATE OWNER <input type="checkbox"/> County (CNTY) <input checked="" type="checkbox"/> City (CITY) <input type="checkbox"/> Township (TOWN) <input type="checkbox"/> State (STAT) <input type="checkbox"/> Public School (PUSC) <input type="checkbox"/> Private School (PRSC) <input type="checkbox"/> Non-Profit Association (NPAP) <input type="checkbox"/> Indian Tribe (INDN)		b. PUBLIC CARE <input type="checkbox"/> Nursing Home (PBCR-NURS) <input type="checkbox"/> Long Term Care (PBCR-TERM) <input type="checkbox"/> Rehab. Facility (PBCR-RHAB) <input type="checkbox"/> Public Health Ctr. (PBCR-HCTR) <input type="checkbox"/> Res. Child Care Ctr. (PBCR-RCCC)		d. HOSPITALS <input type="checkbox"/> General (HOSP-GENL) <input type="checkbox"/> Tuberculosis (HOSP-TUBR) <input type="checkbox"/> OTHER (HOSP-OTHR)	

MINI-AUDIT FUNDING REQUEST	C		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	
	<p>If eligible for both Federal and State Funding:</p> <p>Have you received a mini-audit grant before? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>Have you previously applied for mini-audit funding? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Do you wish to apply for mini-audit funding? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>Date: _____</p> <p>Name: _____</p> <p>Signature: _____</p> <p>If eligible for Federal funding only:</p> <p>Have you received a mini-audit grant before? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Have you previously applied for mini-audit funding? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Do you wish to apply for mini-audit funding? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>The 50% match for Federal funds will come from: (Use additional sheets if necessary.)</p> <p>Date: _____</p> <p>Name: _____</p> <p>Signature: _____</p>			

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.

F

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 save at least 20% of the building's energy consumption as specified in section I.
(did, did not)

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 be the subject of a maxi-audit.
(should, should not)

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 undergo further solar conversion analysis, and/or should not undergo further analysis of the renewable resources -- waste, wind, wood. (Circle proper resources)
(should, should not)

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

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

AUDIT TEAM

G	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	

BUILDING INFORMATION

H	INSTRUCTIONS Correctly answer the following questions for the building being mini-audited.
	Is there open land adjacent to the building? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> 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: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No South facing Wall: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> 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? <input type="checkbox"/> square <input checked="" type="checkbox"/> rectangle <input type="checkbox"/> H-shaped <input type="checkbox"/> E-shaped <input type="checkbox"/> other (specify) _____
	Is the roof of the building flat or pitched? <input checked="" type="checkbox"/> flat <input type="checkbox"/> 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? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> 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.) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	If the space heating equipment is inside the building, where is it located? <input checked="" type="checkbox"/> Ground Floor <input type="checkbox"/> Basement <input type="checkbox"/> Roof <input type="checkbox"/> Other (specify) _____
	Is the building's water heating equipment located within the building? (A no answer indicates the equipment is in a separate building.) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	If the water heating equipment is inside the building, where is it located? <input checked="" type="checkbox"/> Ground Floor <input type="checkbox"/> Basement <input type="checkbox"/> 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? <input checked="" type="checkbox"/> Central <input type="checkbox"/> Multiple <input type="checkbox"/> Combination

SOLAR POTENTIAL INFORMATION

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				

SAVINGS ESTIMATION	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 — <input checked="" type="checkbox"/> 0% <input checked="" type="checkbox"/> 5% <input type="checkbox"/> 10% <input type="checkbox"/> 15% <input type="checkbox"/> 20% <input type="checkbox"/> 25% <input type="checkbox"/> other (specify) _____ Range of Fuel Savings — <input type="checkbox"/> 0% <input checked="" type="checkbox"/> 5% <input checked="" type="checkbox"/> 10% <input type="checkbox"/> 15% <input type="checkbox"/> 20% <input type="checkbox"/> 25% <input type="checkbox"/> other (specify) _____																																												
	2	Calculate ranges of energy and cost savings — <div style="text-align: center; font-weight: bold;">Range of Electrical Savings</div> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">% Range</td> <td></td> <td style="text-align: center;">Annual Electrical Consumption</td> <td></td> <td style="text-align: center;">Range of Energy Savings</td> <td></td> <td style="text-align: center;">% Range</td> <td></td> <td style="text-align: center;">Annual Electrical Dollars Spent</td> <td></td> <td style="text-align: center;">Range of Electrical Dollars Savings</td> </tr> <tr> <td style="text-align: center;">lower bound</td> <td style="text-align: center;">0 %</td> <td style="text-align: center;">x</td> <td style="text-align: center;">40760 kwh</td> <td style="text-align: center;">=</td> <td style="text-align: center;">0 kwh,</td> <td style="text-align: center;">0 %</td> <td style="text-align: center;">x</td> <td style="text-align: center;">\$ 1738.43</td> <td style="text-align: center;">=</td> <td style="text-align: center;">\$ 0</td> </tr> <tr> <td></td> <td style="text-align: center;">to</td> <td></td> <td></td> <td></td> <td style="text-align: center;">to</td> <td style="text-align: center;">to</td> <td></td> <td></td> <td></td> <td style="text-align: center;">to</td> </tr> <tr> <td style="text-align: center;">upper bound</td> <td style="text-align: center;">5 %</td> <td style="text-align: center;">x</td> <td style="text-align: center;">40760 kwh</td> <td style="text-align: center;">=</td> <td style="text-align: center;">2038 kwh,</td> <td style="text-align: center;">5 %</td> <td style="text-align: center;">x</td> <td style="text-align: center;">\$ 1738.43</td> <td style="text-align: center;">=</td> <td style="text-align: center;">\$ 86.92</td> </tr> </table>	% 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				to	to				to	upper bound	5 %	x	40760 kwh	=	2038 kwh,	5 %	x	\$ 1738.43	=	\$ 86.92
	% 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				to	to				to																																				
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3	<div style="text-align: center; font-weight: bold;">Range of Fuel Savings</div> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">% Range</td> <td></td> <td style="text-align: center;">Annual Fuel Consumption</td> <td></td> <td style="text-align: center;">Range of Fuel Savings</td> <td></td> <td style="text-align: center;">% Range</td> <td></td> <td style="text-align: center;">Annual Fuel Dollars Spent</td> <td></td> <td style="text-align: center;">Range of Fuel Dollars Savings</td> </tr> <tr> <td style="text-align: center;">lower bound</td> <td style="text-align: center;">5 %</td> <td style="text-align: center;">x</td> <td style="text-align: center;">72.0x10⁶ Btu</td> <td style="text-align: center;">=</td> <td style="text-align: center;">36.0x10⁵ Btu,</td> <td style="text-align: center;">5 %</td> <td style="text-align: center;">x</td> <td style="text-align: center;">\$ 1623.32</td> <td style="text-align: center;">=</td> <td style="text-align: center;">\$ 81.17</td> </tr> <tr> <td></td> <td style="text-align: center;">to</td> <td></td> <td></td> <td></td> <td style="text-align: center;">to</td> <td style="text-align: center;">to</td> <td></td> <td></td> <td></td> <td style="text-align: center;">to</td> </tr> <tr> <td style="text-align: center;">upper bound</td> <td style="text-align: center;">10 %</td> <td style="text-align: center;">x</td> <td style="text-align: center;">72.0x10⁶ Btu</td> <td style="text-align: center;">=</td> <td style="text-align: center;">72.0x10⁵ Btu,</td> <td style="text-align: center;">10 %</td> <td style="text-align: center;">x</td> <td style="text-align: center;">\$ 1623.32</td> <td style="text-align: center;">=</td> <td style="text-align: center;">\$ 162.33</td> </tr> </table>	% Range		Annual Fuel Consumption		Range of Fuel Savings		% Range		Annual Fuel Dollars Spent		Range of Fuel Dollars Savings	lower bound	5 %	x	72.0x10 ⁶ Btu	=	36.0x10 ⁵ Btu,	5 %	x	\$ 1623.32	=	\$ 81.17		to				to	to				to	upper bound	10 %	x	72.0x10 ⁶ Btu	=	72.0x10 ⁵ Btu,	10 %	x	\$ 1623.32	=	\$ 162.33	
% Range		Annual Fuel Consumption		Range of Fuel Savings		% Range		Annual Fuel Dollars Spent		Range of Fuel Dollars Savings																																				
lower bound	5 %	x	72.0x10 ⁶ Btu	=	36.0x10 ⁵ Btu,	5 %	x	\$ 1623.32	=	\$ 81.17																																				
	to				to	to				to																																				
upper bound	10 %	x	72.0x10 ⁶ Btu	=	72.0x10 ⁵ Btu,	10 %	x	\$ 1623.32	=	\$ 162.33																																				
	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.																																													

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

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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.		NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS	ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS				
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.			RMS
8	3	1	Check the calibration of all controllers and devices for proper settings and operations.			RMS
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 grilles). 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

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, 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				
16	3	2	Clean and remove obstructions from all room air outlets (diffusers, registers and grilles). They should be kept clean and free of all dirt and foreign materials.			
17	3	3	Inspect and lubricate bearings of fans.			RMS
18	3	3	Inspect drive belts. Adjust or replace as necessary to ensure proper operation.			RMS
19	3	3	Inspect fans for normal operation.			RMS
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.			RMS
21	3	3	Keep condenser coil face clean to permit proper air flow.			RMS
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			August, 1979

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				
			efficiency of the building. These records will indicate the impact of energy conservation measures.			
31	5	1	Review the record books on a regular basis.			August, 1979
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.			RMS
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.			RMS
37	7	4	Turn off gas pilots for furnaces, boilers, and space heaters during the non-heating months and during long unoccupied periods.			RMS
38	7	4	Keep all heat exchanger surfaces clean. Check air-to-fuel ratio and adjust as necessary.			RMS
39	7	4	Inspect casing for air leaks and seal as necessary.			
40	7	4	Follow guidelines suggested for fan and motor maintenance.			

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Note 2: Reproduce this page as necessary

MINI-AUDIT REPORT

FORM NO. MIN-01

CONTACT DATA	BUILDING NAME Fire Station #6		NAME OF ORGANIZATION City of Bloomington		DATE 5-17-80
	BUILDING ADDRESS 8601 Lakeview Road		ADDRESS 2215 West Old Shakopee Road		
	CITY Bloomington, MN	ZIP CODE 55438	CITY Bloomington, MN	ZIP CODE 55431	
	PERSON COMPLETING FORM Randy Smith	TELEPHONE (612) 935-6901	CONTACT PERSON Arthur Jensen	TELEPHONE (612) 881-5811	

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 <input checked="" type="checkbox"/> Public (PUB) <input type="checkbox"/> Non-Profit Association (NAP)	3a. SCHOOLS <input type="checkbox"/> Elementary (SCHL-ELM) <input type="checkbox"/> Secondary (SCHL-SECD) <input type="checkbox"/> Coll. or Univ. (SCHL-POST) <input type="checkbox"/> Vocational (SCHL-VOCL) <input type="checkbox"/> Education Agency (SCHL-ADMN) <input type="checkbox"/> Administration (SCHL-ADMN) <input type="checkbox"/> OTHER (SCHL-OTHR)	c. LOCAL GOVERNMENT <input type="checkbox"/> Office (LOGG-OFFC) <input type="checkbox"/> Storage (LOGG-STRG) <input type="checkbox"/> Service (LOGG-SERV) <input type="checkbox"/> Library (LOGG-LBRY) <input type="checkbox"/> Police (LOGG-PLCE) <input checked="" type="checkbox"/> Fire (LOGG-FIRE) <input type="checkbox"/> OTHER (LOGG-OTHR)	2. ULTIMATE OWNER <input type="checkbox"/> County (CNTY) <input checked="" type="checkbox"/> City (CITY) <input type="checkbox"/> Township (TOWN) <input type="checkbox"/> State (STAT) <input type="checkbox"/> Public School (PUSC) <input type="checkbox"/> Private School (PRSC) <input type="checkbox"/> Non-Profit Association (NPAP) <input type="checkbox"/> Indian Tribe (INDN)
	b. PUBLIC CARE <input type="checkbox"/> Nursing Home (PBCR-NURS) <input type="checkbox"/> Long Term Care (PBCR-TERM) <input type="checkbox"/> Rehab. Facility (PBCR-RHAB) <input type="checkbox"/> Public Health Ctr. (PBCR-HCTR) <input type="checkbox"/> Res. Child Care Ctr. (PBCR-RCCC)	d. HOSPITALS <input type="checkbox"/> General (HOSP-GENL) <input type="checkbox"/> Tuberculosis (HOSP-TUBR) <input type="checkbox"/> OTHER (HOSP-OTHR)		

MINI-AUDIT FUNDING REQUEST	C	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.
	<p> If eligible for both Federal and State Funding: ... Have you received a mini-audit grant before? <input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No Have you previously applied for mini-audit funding? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Do you wish to apply for mini-audit funding? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No </p> <p> Date: _____ Name: _____ Signature: _____ </p> <p> If eligible for Federal funding only: Have you received a mini-audit grant before? <input type="checkbox"/> Yes <input type="checkbox"/> No Have you previously applied for mini-audit funding? <input type="checkbox"/> Yes <input type="checkbox"/> No Do you wish to apply for mini-audit funding? <input type="checkbox"/> Yes <input type="checkbox"/> No The 50% match for Federal funds will come from: (Use additional sheets if necessary.) </p> <p> Date: _____ Name: _____ Signature: _____ </p>	

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.

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 save at least 20% of the building's energy consumption as specified in section I.
(did, did not)

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 be the subject of a maxi-audit.
(should, should not)

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 undergo further solar conversion analysis, and/or should not undergo further analysis of the renewable resources -- waste, wind, wood. (Circle proper resources)
(should, should not)

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

AUDIT TEAM

G	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	

BUILDING INFORMATION

H	INSTRUCTIONS: Correctly answer the following questions for the building being mini-audited.
	Is there open land adjacent to the building? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> 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: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No South facing Wall: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> 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? <input checked="" type="checkbox"/> square <input type="checkbox"/> rectangle <input type="checkbox"/> H-shaped <input type="checkbox"/> E-shaped <input type="checkbox"/> other (specify) _____
	Is the roof of the building flat or pitched? <input checked="" type="checkbox"/> flat <input type="checkbox"/> pitched
	If pitched, what is the compass orientation of the ridge line? _____
	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? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	If the space heating equipment is inside the building, where is it located? <input checked="" type="checkbox"/> Ground Floor <input type="checkbox"/> Basement <input type="checkbox"/> Roof <input type="checkbox"/> Other (specify) _____
	Is the building's water heating equipment located within the building? (A no answer indicates the equipment is in a separate building) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	If the water heating equipment is inside the building, where is it located? <input checked="" type="checkbox"/> Ground Floor <input type="checkbox"/> Basement <input type="checkbox"/> 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? <input checked="" type="checkbox"/> Central <input type="checkbox"/> Multiple <input type="checkbox"/> Combination	

SOLAR POTENTIAL INFORMATION

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			

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.

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.		NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS	ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS				
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.			RMS
6	3	1	Check the calibration of all controllers and devices for proper settings and operations.			RMS
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 grilles). They should be kept clean and free of all dirt and foreign materials.			
12	3	3	Inspect and lubricate bearings of fans.			RMS
13	3	3	Inspect drive belts. Adjust or replace as necessary to ensure proper operation.			RMS
14	3	3	Inspect fans for normal operation.			RMS
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.			RMS

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Note 2: Reproduce this page as necessary.

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, 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				
16	3	3	Keep condenser coil face clean to permit proper air flow.			RMS
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.			August, 1979
26	5	1	Review the record books on a regular basis.			August, 1979
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.			RMS
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.			RMS

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

Instructions Read through the energy conservation recommendation list provided. Then walk through the building with the list. Example: 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.*

	ENERGY
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	ENERGY
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Note 2 Reproduce this page as necessary

MINI-AUDIT REPORT

FORM NO. MIN-01

CONTACT DATA	BUILDING NAME Community Ice Garden		NAME OF ORGANIZATION City of Bloomington		DATE 5-27-80
	BUILDING ADDRESS 3600 West 98th Street		ADDRESS 2215 West Old Shakopee Road		
	CITY Bloomington, MN	ZIP CODE 55431	CITY Bloomington, MN	ZIP CODE 55431	
	PERSON COMPLETING FORM Paul Martinsen		TELEPHONE (612) 935-6901	CONTACT PERSON Arthur Jensen	
				TELEPHONE (612) 881-5811	

BUILDING ELIGIBILITY CODE	B 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 <input checked="" type="checkbox"/> Public (PUB) <input type="checkbox"/> Non-Profit Association (NAP)		3a. SCHOOLS <input type="checkbox"/> Elementary (SCHL-ELM) <input type="checkbox"/> Secondary (SCHL-SECD) <input type="checkbox"/> Coll. or Univ. (SCHL-POST) <input type="checkbox"/> Vocational (SCHL-VOCL) <input type="checkbox"/> Education Agency (SCHL-ADMN) <input type="checkbox"/> Administration (SCHL-ADMN) <input type="checkbox"/> OTHER (SCHL-OTHR)		c. LOCAL GOVERNMENT <input type="checkbox"/> Office (LOGG-OFFC) <input type="checkbox"/> Storage (LOGG-STRG) <input type="checkbox"/> Service (LOGG-SERV) <input type="checkbox"/> Library (LOGG-LBRY) <input type="checkbox"/> Police (LOGG-PLCE) <input type="checkbox"/> Fire (LOGG-FIRE) <input checked="" type="checkbox"/> OTHER (LOGG-OTHR)	
	2. ULTIMATE OWNER <input type="checkbox"/> County (CNTY) <input checked="" type="checkbox"/> City (CITY) <input type="checkbox"/> Township (TOWN) <input type="checkbox"/> State (STAT) <input type="checkbox"/> Public School (PUSC) <input type="checkbox"/> Private School (PRSC) <input type="checkbox"/> Non-Profit Association (NPAP) <input type="checkbox"/> Indian Tribe (INDN)		b. PUBLIC CARE <input type="checkbox"/> Nursing Home (PBCR-NURS) <input type="checkbox"/> Long Term Care (PBCR-TERM) <input type="checkbox"/> Rehab. Facility (PBCR-RHAB) <input type="checkbox"/> Public Health Ctr. (PBCR-HCTR) <input type="checkbox"/> Res. Child Care Ctr. (PBCR-RCCC)		d. HOSPITALS <input type="checkbox"/> General (HOSP-GENL) <input type="checkbox"/> Tuberculosis (HOSP-TUBR) <input type="checkbox"/> OTHER (HOSP-OTHR)	

MINI-AUDIT FUNDING REQUEST	C 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.	
	<p>If eligible for both Federal and State Funding:</p> <p>Have you received a mini-audit grant before? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>Have you previously applied for mini-audit funding? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Do you wish to apply for mini-audit funding? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>Date: _____</p> <p>Name: _____</p> <p>Signature: _____</p> <p>If eligible for Federal funding only:</p> <p>Have you received a mini-audit grant before? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Have you previously applied for mini-audit funding? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Do you wish to apply for mini-audit funding? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>The 50% match for Federal funds will come from: (Use additional sheets if necessary.)</p> <p>Date: _____</p> <p>Name: _____</p> <p>Signature: _____</p>	

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 save at least 20% of the building's energy consumption as specified in section I.
 (did, did not)

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

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 undergo further analysis of the renewable resources — waste, wind, wood. (Circle proper resources)
 (should, should not)

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 BM 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

**MINI-AUDIT
STATEMENTS**

AUDIT TEAM	F	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

BUILDING INFORMATION	G	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	

SOLAR POTENTIAL INFORMATION	H	INSTRUCTIONS: Correctly answer the following questions for the building being mini-audited.
		Is there open land adjacent to the building? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> 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: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No South facing Wall: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> 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? <input checked="" type="checkbox"/> square <input type="checkbox"/> rectangle <input type="checkbox"/> H-shaped <input type="checkbox"/> E-shaped <input type="checkbox"/> other (specify) _____
		Is the roof of the building flat or pitched? <input checked="" type="checkbox"/> flat <input type="checkbox"/> 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? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
		What is the exterior facing material for the south facing wall? <u>Concrete Block</u>
		What percentage of the south facing wall is glass? <u>0</u> %
		Is the building's space heating equipment located within or on the building? (A no answer indicates the equipment is in a separate building) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
		If the space heating equipment is inside the building, where is it located? <input type="checkbox"/> Ground Floor <input type="checkbox"/> Basement <input checked="" type="checkbox"/> Roof <input type="checkbox"/> Other (specify) _____
		Is the building's water heating equipment located within the building? (A no answer indicates the equipment is in a separate building.) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
		If the water heating equipment is inside the building, where is it located? <input checked="" type="checkbox"/> Ground Floor <input type="checkbox"/> Basement <input type="checkbox"/> 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? <input type="checkbox"/> Central <input checked="" type="checkbox"/> Multiple <input type="checkbox"/> Combination	

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			

SAVINGS ESTIMATION	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 — <input checked="" type="checkbox"/> 0% <input checked="" type="checkbox"/> 5% <input type="checkbox"/> 10% <input type="checkbox"/> 15% <input type="checkbox"/> 20% <input type="checkbox"/> 25% <input type="checkbox"/> other (specify) _____ Range of Fuel Savings — <input type="checkbox"/> 0% <input checked="" type="checkbox"/> 5% <input checked="" type="checkbox"/> 10% <input type="checkbox"/> 15% <input type="checkbox"/> 20% <input type="checkbox"/> 25% <input type="checkbox"/> other (specify) _____				
	2 Calculate ranges of energy and cost savings —				
	Range of Electrical Savings				
	% Range lower bound <u>0</u> % to upper bound <u>5</u> %	Annual Electrical Consumption <u>1.3x10⁶</u> kwh to <u>1.3x10⁶</u> kwh	Range of Energy Savings <u>0</u> kwh, <u>0</u> % to <u>6.6x10⁴</u> kwh, <u>5</u> %	Annual Electrical Dollars Spent <u>\$ 39,126.18</u> to <u>\$ 39,126.18</u>	Range of Electrical Dollars Savings <u>\$ 0</u> to <u>\$ 1956.31</u>
	Range of Fuel Savings				
	% Range lower bound <u>5</u> % to upper bound <u>10</u> %	Annual Fuel Consumption <u>5.2x10⁹</u> Btu to <u>5.2x10⁹</u> Btu	Range of Fuel Savings <u>2.6x10⁸</u> Btu, <u>5</u> % to <u>5.2x10⁸</u> Btu, <u>10</u> %	Annual Fuel Dollars Spent <u>\$ 13,076.83</u> to <u>\$ 13,076.83</u>	Range of Fuel Dollars Savings <u>\$ 653.84</u> to <u>\$ 1,307.68</u>
	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.				

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.*

[illegible]

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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.		NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS	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 grilles). 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.

OPTIONAL: OPTIONAL:

ITEM NO	CLASSIFICATION NO.		NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS	ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS				
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.			August, 1979
29	5	1	Review the record books on a regular basis.			August, 1979
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.

<div style="display: flex; justify-content: space-between;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">NEW OPPORTUNITIES</div> <div> <p>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.</p> </div> </div>						
ITEM NO	CLASSIFICATION NO.		NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS	ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS				
31	5	2	Consult manufacturers literature for guidance in establishing a maintenance schedule.			
32	6	1	Adjust water supply to 100°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.

MINI-AUDIT REPORT

FORM NO. MIN-01

CONTACT DATA	BUILDING NAME Dwan Golf Course - Club House		NAME OF ORGANIZATION City of Bloomington		DATE 5-23-80
	BUILDING ADDRESS 3301 West 110th Street		ADDRESS 2215 West Old Shakopee Road		
	CITY Bloomington, MN	ZIP CODE 55431	CITY Bloomington, MN	ZIP CODE 55431	
	PERSON COMPLETING FORM Randy Smith		TELEPHONE (612) 935-6901		CONTACT PERSON Arthur Jensen
				TELEPHONE (612) 881-5811	

BUILDING ELIGIBILITY CODE	<p>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 subcategory befitting the building function.</p>					
	<p>1. OWNERSHIP TYPE</p> <p><input checked="" type="checkbox"/> Public (PUB)</p> <p><input type="checkbox"/> Non-Profit Association (NAP)</p>		<p>3a. SCHOOLS</p> <p><input type="checkbox"/> Elementary (SCHL-ELM)</p> <p><input type="checkbox"/> Secondary (SCHL-SECD)</p> <p><input type="checkbox"/> Coll. or Univ. (SCHL-POST)</p> <p><input type="checkbox"/> Vocational (SCHL-VOCL)</p> <p><input type="checkbox"/> Education Agency (SCHL-ADMN)</p> <p><input type="checkbox"/> Administration (SCHL-ADMN)</p> <p><input type="checkbox"/> OTHER (SCHL-OTHR)</p>		<p>c. LOCAL GOVERNMENT</p> <p><input type="checkbox"/> Office (LOCG-OFFC)</p> <p><input type="checkbox"/> Storage (LOCG-STRG)</p> <p><input type="checkbox"/> Service (LOCG-SERV)</p> <p><input type="checkbox"/> Library (LOCG-LBRY)</p> <p><input type="checkbox"/> Police (LOCG-PLCE)</p> <p><input type="checkbox"/> Fire (LOCG-FIRE)</p> <p><input checked="" type="checkbox"/> OTHER (LOCG-OTHR)</p>	
	<p>2. ULTIMATE OWNER</p> <p><input type="checkbox"/> County (CNTY)</p> <p><input checked="" type="checkbox"/> City (CITY)</p> <p><input type="checkbox"/> Township (TOWN)</p> <p><input type="checkbox"/> State (STAT)</p> <p><input type="checkbox"/> Public School (PUSC)</p> <p><input type="checkbox"/> Private School (PRSC)</p> <p><input type="checkbox"/> Non-Profit Association (NPAP)</p> <p><input type="checkbox"/> Indian Tribe (INDN)</p>		<p>b. PUBLIC CARE</p> <p><input type="checkbox"/> Nursing Home (PBCR-NURS)</p> <p><input type="checkbox"/> Long Term Care (PBCR-TERM)</p> <p><input type="checkbox"/> Rehab. Facility (PBCR-RHAB)</p> <p><input type="checkbox"/> Public Health Ctr. (PBCR-HCTR)</p> <p><input type="checkbox"/> Res. Child Care Ctr. (PBCR-RCCC)</p>		<p>d. HOSPITALS</p> <p><input type="checkbox"/> General (HOSP-GENL)</p> <p><input type="checkbox"/> Tuberculosis (HOSP-TUBR)</p> <p><input type="checkbox"/> OTHER (HOSP-OTHR)</p>	

MINI-AUDIT FUNDING REQUEST	<p>C 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.</p>	
	<p>If eligible for both Federal and State Funding:</p> <p>Have you received a mini-audit grant before? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>Have you previously applied for mini-audit funding? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Do you wish to apply for mini-audit funding? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>Date: _____</p> <p>Name: _____</p> <p>Signature: _____</p> <p>If eligible for Federal funding only:</p> <p>Have you received a mini-audit grant before? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Have you previously applied for mini-audit funding? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Do you wish to apply for mini-audit funding? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>The 50% match for Federal funds will come from: (Use additional sheets if necessary.)</p> <p>Date: _____</p> <p>Name: _____</p> <p>Signature: _____</p>	

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.

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 save at least 20% of the building's energy consumption as specified in section I.
(did, did not)

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 be the subject of a maxi-audit.
(should, should not)

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 undergo further solar conversion analysis, and/or should not undergo further analysis of the renewable resources — waste, wind, wood. (Circle proper resources)
(should, should not)

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

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.

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			

20% SAVINGS DATA

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 63237 kwh	= 0 kwh,	0 %	x \$ 2451.17	= \$ 0
to		to	to		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 33.0x10 ⁶ Btu	= 16.5x10 ⁵ Btu,	5 %	x \$ 747.52	= \$ 37.38
to		to	to		to
upper bound 10 %	x 33.0x10 ⁶ Btu	= 33.0x10 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.

SAVINGS ESTIMATION

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.		NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS	ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS				
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 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 controllers 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 grilles). 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.

NEW OPPORTUNITIES			<p>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.</p>			
ITEM NO	CLASSIFICATION NO		NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS	ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS				
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.			August, 1979
29	5	1	Review the record books on a regular basis.			August, 1979
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			

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.

Instructions: Read through the energy conservation recommendation list provided. Then walk through the building with the list, examining the suggested maintenance and operational changes, and any other low cost energy conservation measures, that pertain to the facility. Assign a classification number to each item, 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.*

[illegible]

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

CONTACT DATA	BUILDING NAME Dwan Golf Course Maintenance Building		NAME OF ORGANIZATION City of Bloomington		DATE 5-23-80
	BUILDING ADDRESS 3651 West 110th Street		ADDRESS 2215 West Old Shakopee Road		
	CITY Bloomington, MN	ZIP CODE 55431	CITY Bloomington, MN	ZIP CODE 55431	
	PERSON COMPLETING FORM Randy Smith		TELEPHONE (612) 935-6901		CONTACT PERSON Arthur Jensen
				TELEPHONE (612) 881-5811	

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 <input checked="" type="checkbox"/> Public (PUB) <input type="checkbox"/> Non-Profit Association (NAP)		3a. SCHOOLS <input type="checkbox"/> Elementary (SCHL-ELM) <input type="checkbox"/> Secondary (SCHL-SECD) <input type="checkbox"/> Coll. or Univ. (SCHL-POST) <input type="checkbox"/> Vocational (SCHL-VOCL) <input type="checkbox"/> Education Agency (SCHL-ADMN) <input type="checkbox"/> Administration (SCHL-ADMN) <input type="checkbox"/> OTHER (SCHL-OTHR)		c. LOCAL GOVERNMENT <input type="checkbox"/> Office (LOGG-OFFC) <input type="checkbox"/> Storage (LOGG-STRG) <input type="checkbox"/> Service (LOGG-SERV) <input type="checkbox"/> Library (LOGG-LBRY) <input type="checkbox"/> Police (LOGG-PLCE) <input type="checkbox"/> Fire (LOGG-FIRE) <input checked="" type="checkbox"/> OTHER (LOGG-OTHR)	
	2. ULTIMATE OWNER <input type="checkbox"/> County (CNTY) <input checked="" type="checkbox"/> City (CITY) <input type="checkbox"/> Township (TOWN) <input type="checkbox"/> State (STAT) <input type="checkbox"/> Public School (PUSC) <input type="checkbox"/> Private School (PRSC) <input type="checkbox"/> Non-Profit Association (NPAP) <input type="checkbox"/> Indian Tribe (INDN)		b. PUBLIC CARE <input type="checkbox"/> Nursing Home (PBCR-NURS) <input type="checkbox"/> Long Term Care (PBCR-TERM) <input type="checkbox"/> Rehab. Facility (PBCR-RHAB) <input type="checkbox"/> Public Health Ctr. (PBCR-HCTR) <input type="checkbox"/> Res. Child Care Ctr. (PBCR-RCCC)		d. HOSPITALS <input type="checkbox"/> General (HOSP-GENL) <input type="checkbox"/> Tuberculosis (HOSP-TUBR) <input type="checkbox"/> OTHER (HOSP-OTHR)	

MINI-AUDIT FUNDING REQUEST	C	
	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? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Have you previously applied for mini-audit funding? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Do you wish to apply for mini-audit funding? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
Date: _____ Name: _____ Signature: _____		
If eligible for Federal funding only: Have you received a mini-audit grant before? <input type="checkbox"/> Yes <input type="checkbox"/> No Have you previously applied for mini-audit funding? <input type="checkbox"/> Yes <input type="checkbox"/> No Do you wish to apply for mini-audit funding? <input type="checkbox"/> Yes <input type="checkbox"/> No The 50% match for Federal funds will come from: (Use additional sheets if necessary.)		
Date: _____ Name: _____ Signature: _____		

DENERGY 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 save at least 20% of the building's energy consumption as specified in section I. (did, did not)

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 be the subject of a maxi-audit. (should, should not)

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 undergo further solar conversion analysis, and/or should not undergo further analysis of the renewable resources — waste, wind, wood. (Circle proper resources) (should, should not)

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)

Signature

206

Building Organizational Authority (Print or Type)

Signature

Rieke Carroll Muller Assoc., Inc.

Firm Name (if none, enter none)

Date

P.O. Box 130 Hopkins, MN 55343

Address

(612) 935-6901

Phone

5-23-80

Date

MINI-AUDIT
STATEMENTS

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

BUILDING INFORMATION	G	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	

SOLAR POTENTIAL INFORMATION	H	INSTRUCTIONS: Correctly answer the following questions for the building being mini-audited.
		Is there open land adjacent to the building? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> 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: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No South facing Wall: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> 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? <input type="checkbox"/> square <input checked="" type="checkbox"/> rectangle <input type="checkbox"/> H-shaped <input type="checkbox"/> E-shaped <input type="checkbox"/> other (specify) _____
		Is the roof of the building flat or pitched? <input checked="" type="checkbox"/> flat <input type="checkbox"/> pitched
		If pitched, what is the compass orientation of the ridge line? _____
		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? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
		What is the exterior facing material for the south facing wall? <u>Wood siding</u>
		What percentage of the south facing wall is glass? <u>5</u> %
		Is the building's space heating equipment located within or on the building? (A no answer indicates the equipment is in a separate building.) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
		If the space heating equipment is inside the building, where is it located? <input checked="" type="checkbox"/> Ground Floor <input type="checkbox"/> Basement <input type="checkbox"/> Roof <input type="checkbox"/> Other (specify) _____
		Is the building's water heating equipment located within the building? (A no answer indicates the equipment is in a separate building.) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
		If the water heating equipment is inside the building, where is it located? <input checked="" type="checkbox"/> Ground Floor <input type="checkbox"/> Basement <input type="checkbox"/> 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? <input checked="" type="checkbox"/> Central <input type="checkbox"/> Multiple <input type="checkbox"/> Combination	

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				

SAVINGS ESTIMATION	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 — <input checked="" type="checkbox"/> 0% <input checked="" type="checkbox"/> 5% <input type="checkbox"/> 10% <input type="checkbox"/> 15% <input type="checkbox"/> 20% <input type="checkbox"/> 25% <input type="checkbox"/> other (specify) _____ Range of Fuel Savings — <input type="checkbox"/> 0% <input checked="" type="checkbox"/> 5% <input checked="" type="checkbox"/> 10% <input type="checkbox"/> 15% <input type="checkbox"/> 20% <input type="checkbox"/> 25% <input type="checkbox"/> other (specify) _____																								
	2	Calculate ranges of energy and cost savings — <div style="text-align: center; font-weight: bold;">Range of Electrical Savings</div> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">% Range</th> <th style="text-align: left;">Annual Electrical Consumption</th> <th style="text-align: left;">Range of Energy Savings</th> <th style="text-align: left;">% Range</th> <th style="text-align: left;">Annual Electrical Dollars Spent</th> <th style="text-align: left;">Range of Electrical Dollars Savings</th> </tr> </thead> <tbody> <tr> <td>lower bound 0 %</td> <td>x 22988 kwh</td> <td>= 0 kwh</td> <td>0 %</td> <td>x \$ 1004.85</td> <td>= \$ 0</td> </tr> <tr> <td style="text-align: center;">to</td> <td></td> <td style="text-align: center;">to</td> <td style="text-align: center;">to</td> <td></td> <td style="text-align: center;">to</td> </tr> <tr> <td>upper bound 5 %</td> <td>x 22988 kwh</td> <td>= 1149.4 kwh</td> <td>5 %</td> <td>x \$ 1004.85</td> <td>= \$ 50.24</td> </tr> </tbody> </table>	% 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		to	to		to	upper bound 5 %	x 22988 kwh	= 1149.4 kwh	5 %	x \$ 1004.85	= \$ 50.24
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	to		to	to		to																				
	upper bound 5 %	x 22988 kwh	= 1149.4 kwh	5 %	x \$ 1004.85	= \$ 50.24																				
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upper bound 10 %	x 51.6x10 ⁶ Btu	= 51.6x10 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.																										

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.*

[illegible]

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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 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 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 cavities.					
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 grilles). 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.

OPTIONAL: OPTIONAL:

ITEM NO	CLASSIFICATION NO		NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS	ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS				
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.			August, 1979
24	5	1	Review the record books on a regular basis.			August, 1979
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

CONTACT DATA	BUILDING NAME Hyland Greens Golf Course-Club House		NAME OF ORGANIZATION City of Bloomington		DATE 5-23-80
	BUILDING ADDRESS 10100 Normandale Boulevard		ADDRESS 2215 West Old Shakopee Road		
	CITY Bloomington, MN	ZIP CODE 55437	CITY Bloomington, MN	ZIP CODE 55431	
	PERSON COMPLETING FORM Randy Smith		TELEPHONE (612) 935-6901		CONTACT PERSON Arthur Jensen
					TELEPHONE (612) 881-5811

BUILDING ELIGIBILITY CODE	B 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 <input checked="" type="checkbox"/> Public (PUB) <input type="checkbox"/> Non-Profit Association (NAP)	3a. SCHOOLS <input type="checkbox"/> Elementary (SCHL-ELM) <input type="checkbox"/> Secondary (SCHL-SECD) <input type="checkbox"/> Coll. or Univ. (SCHL-POST) <input type="checkbox"/> Vocational (SCHL-VOCL) <input type="checkbox"/> Education Agency (SCHL-ADMN) <input type="checkbox"/> Administration (SCHL-ADMN) <input type="checkbox"/> OTHER (SCHL-OTHR)	c. LOCAL GOVERNMENT <input type="checkbox"/> Office (LOCG-OFFC) <input type="checkbox"/> Storage (LOCG-STRG) <input type="checkbox"/> Service (LOCG-SERV) <input type="checkbox"/> Library (LOCG-LBRY) <input type="checkbox"/> Police (LOCG-PLCE) <input type="checkbox"/> Fire (LOCG-FIRE) <input checked="" type="checkbox"/> OTHER (LOCG-OTHR)	2. ULTIMATE OWNER <input type="checkbox"/> County (CNTY) <input checked="" type="checkbox"/> City (CITY) <input type="checkbox"/> Township (TOWN) <input type="checkbox"/> State (STAT) <input type="checkbox"/> Public School (PUSC) <input type="checkbox"/> Private School (PRSC) <input type="checkbox"/> Non-Profit Association (NPAP) <input type="checkbox"/> Indian Tribe (INDN)
	b. PUBLIC CARE <input type="checkbox"/> Nursing Home (PBCR-NURS) <input type="checkbox"/> Long Term Care (PBCR-TERM) <input type="checkbox"/> Rehab. Facility (PBCR-RHAB) <input type="checkbox"/> Public Health Ctr. (PBCR-HCTR) <input type="checkbox"/> Res. Child Care Ctr. (PBCR-RCCC)	d. HOSPITALS <input type="checkbox"/> General (HOSP-GENL) <input type="checkbox"/> Tuberculosis (HOSP-TUBR) <input type="checkbox"/> OTHER (HOSP-OTHR)		

MINI-AUDIT FUNDING REQUEST	C 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.
	<p>If eligible for both Federal and State Funding:</p> <p>Have you received a mini-audit grant before? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>Have you previously applied for mini-audit funding? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Do you wish to apply for mini-audit funding? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>Date _____</p> <p>Name: _____</p> <p>Signature: _____</p> <p>If eligible for Federal funding only:</p> <p>Have you received a mini-audit grant before? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Have you previously applied for mini-audit funding? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Do you wish to apply for mini-audit funding? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>The 50% match for Federal funds will come from: (Use additional sheets if necessary.)</p> <p>Date _____</p> <p>Name: _____</p> <p>Signature: _____</p>

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.

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 save at least 20% of the building's energy consumption as specified in section I. (did, did not)

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 be the subject of a maxi-audit. (should, should not)

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 undergo further solar conversion analysis, and/or should not undergo further analysis of the renewable resources -- waste, wind, wood. (Circle proper resources) (should, should not)

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

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

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)
	<u>Good, Clubhouse</u>
	MAJOR CHANGES PLANNED WITHIN NEXT 15 YEARS (i.e. demolition, rehabilitation, conversion from one building type to another)
	<u>None</u>
	STRUCTURAL COMPONENTS OF ROOF (i.e. metal beams, wooden rafters, concrete)
<u>Wooden Rafters</u>	
ROOFING MATERIAL (i.e. tar and gravel, shingles, tile)	
<u>Shingles</u>	

H SOLAR POTENTIAL INFORMATION	INSTRUCTIONS: Correctly answer the following questions for the building being mini-audited.	
	Is there open land adjacent to the building?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> 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: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No South facing Wall: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> 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?	<input type="checkbox"/> square <input checked="" type="checkbox"/> rectangle <input type="checkbox"/> H-shaped <input type="checkbox"/> E-shaped <input type="checkbox"/> other (specify) _____
	Is the roof of the building flat or pitched?	<input type="checkbox"/> flat <input checked="" type="checkbox"/> pitched
	If pitched, what is the compass orientation of the ridgeline?	<u>North-South</u>
	If pitched, what is the angle that the roof makes with horizontal?	<u>45</u> °
	Are there large obstructions on the roof such as chimneys, rooms for mechanical equipment, ventilating units, water towers, etc?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	What is the exterior facing material for the south facing wall?	<u>Wood Siding</u>
	What percentage of the south facing wall is glass?	<u>50</u> %
	Is the building's space heating equipment located within or on the building? (A no answer indicates the equipment is in a separate building.)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	If the space heating equipment is inside the building, where is it located?	<input type="checkbox"/> Ground Floor <input checked="" type="checkbox"/> Basement <input type="checkbox"/> Roof <input type="checkbox"/> Other (specify) _____
	Is the building's water heating equipment located within the building? (A no answer indicates the equipment is in a separate building.)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	If the water heating equipment is inside the building, where is it located?	<input type="checkbox"/> Ground Floor <input checked="" type="checkbox"/> Basement <input type="checkbox"/> 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?	<input checked="" type="checkbox"/> Central <input type="checkbox"/> Multiple <input type="checkbox"/> Combination	

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				

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		to	to		to
upper bound 5 %	x 49560 kwh	= 2478 kwh	5 %	x \$ 3116.55	= \$ 155.83

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		to	to		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.

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.		NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS	ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS				
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 cavities.			
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 lowest point necessary to provide minimum required heating.			
16	3	1	65°F maximum occupied, 65°F maximum unoccupied during the heating season.			

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			<p>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.</p>			
ITEM NO.	CLASSIFICATION NO.		NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS	ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS				
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 grilles). 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			August, 1979

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.

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:

[illegible]

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

CONTACT DATA	BUILDING NAME Water Treatment Plant		NAME OF ORGANIZATION City of Bloomington		DATE 5-17-80		
	BUILDING ADDRESS 9304 Poplar Bridge Road		ADDRESS 2215 West Old Shakopee Road				
	CITY Bloomington, MN		ZIP CODE 55437		CITY Bloomington, MN		
	ZIP CODE 55437		CITY Bloomington, MN		ZIP CODE 55437		
PERSON COMPLETING FORM Randy Smith		TELEPHONE (612) 935-6901		CONTACT PERSON Arthur Jensen		TELEPHONE (612) 881-5811	

BUILDING ELIGIBILITY CODE	B 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 <input checked="" type="checkbox"/> Public (PUB) <input type="checkbox"/> Non-Profit Association (NAP)		3a. SCHOOLS <input type="checkbox"/> Elementary (SCHL-ELM) <input type="checkbox"/> Secondary (SCHL-SECD) <input type="checkbox"/> Coll. or Univ. (SCHL-POST) <input type="checkbox"/> Vocational (SCHL-VOCL) <input type="checkbox"/> Education Agency (SCHL-ADMN) <input type="checkbox"/> Administration (SCHL-ADMN) <input type="checkbox"/> OTHER (SCHL-OTHR)		c. LOCAL GOVERNMENT <input type="checkbox"/> Office (LOCG-OFFC) <input type="checkbox"/> Storage (LOCG-STRG) <input type="checkbox"/> Service (LOCG-SERV) <input type="checkbox"/> Library (LOCG-LBRY) <input type="checkbox"/> Police (LOCG-PLCE) <input type="checkbox"/> Fire (LOCG-FIRE) <input checked="" type="checkbox"/> OTHER (LOCG-OTHR)	
2. ULTIMATE OWNER <input type="checkbox"/> County (CNTY) <input checked="" type="checkbox"/> City (CITY) <input type="checkbox"/> Township (TOWN) <input type="checkbox"/> State (STAT) <input type="checkbox"/> Public School (PUSC) <input type="checkbox"/> Private School (PRSC) <input type="checkbox"/> Non-Profit Association (NPAP) <input type="checkbox"/> Indian Tribe (INDN)		b. PUBLIC CARE <input type="checkbox"/> Nursing Home (PBCR-NURS) <input type="checkbox"/> Long Term Care (PBCR-TERM) <input type="checkbox"/> Rehab. Facility (PBCR-RHAB) <input type="checkbox"/> Public Health Ctr. (PBCR-HCTR) <input type="checkbox"/> Res. Child Care Ctr. (PBCR-RCCC)		d. HOSPITALS <input type="checkbox"/> General (HOSP-GENL) <input type="checkbox"/> Tuberculosis (HOSP-TUBR) <input type="checkbox"/> OTHER (HOSP-OTHR)		

MINI-AUDIT FUNDING REQUEST	C 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	
	<p>If eligible for both Federal and State Funding:</p> <p>Have you received a mini-audit grant before? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>Have you previously applied for mini-audit funding? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>Do you wish to apply for mini-audit funding? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>Date: _____</p> <p>Name: _____</p> <p>Signature: _____</p> <p>If eligible for Federal funding only.</p> <p>Have you received a mini-audit grant before? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Have you previously applied for mini-audit funding? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Do you wish to apply for mini-audit funding? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>The 50% match for Federal funds will come from: (Use additional sheets if necessary.)</p> <p>Date: _____</p> <p>Name: _____</p> <p>Signature: _____</p>	

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 save at least 20% of the building's energy consumption as specified in section I. (did, did not)

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

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 undergo further solar conversion analysis, and/or should not undergo further analysis of the renewable resources -- waste, wind, wood. (Circle proper resources) (should, should not)

undergo further solar conversion analysis, and/or should not undergo further analysis of the renewable resources -- waste, wind, wood. (Circle proper resources) (should, should not)

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

**MINI-AUDIT
STATEMENTS**

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

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

SOLAR POTENTIAL INFORMATION	H INSTRUCTIONS: Correctly answer the following questions for the building being mini-audited.	
	Is there open land adjacent to the building? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> 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 <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No South facing Wall: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
	If the roof or wall are partly shaded, what percentage of the surface is unshaded? % of roof unshaded _____ % % of south facing wall unshaded <u>20</u> %	
	What is the overall shape of the building? <input checked="" type="checkbox"/> square <input type="checkbox"/> rectangle <input type="checkbox"/> H-shaped <input type="checkbox"/> E-shaped <input type="checkbox"/> other (specify) _____	
	Is the roof of the building flat or pitched? <input type="checkbox"/> flat <input checked="" type="checkbox"/> pitched	
	If pitched, what is the compass orientation of the ridgeline? <u>East-West</u>	
	If pitched, what is the angle that the roof makes with horizontal? <u>40</u> °	
	Are there large obstructions on the roof such as chimneys, rooms for mechanical equipment, ventilating units, water towers, etc? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
	What is the exterior facing material for the south facing wall? <u>Face brick</u>	
	What percentage of the south facing wall is glass? <u>5</u> %	
	Is the building's space heating equipment located within or on the building? (A no answer indicates the equipment is in a separate building.) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
	If the space heating equipment is inside the building, where is it located? <input checked="" type="checkbox"/> Ground Floor <input type="checkbox"/> Basement <input type="checkbox"/> Roof <input type="checkbox"/> Other (specify) _____	
	Is the building's water heating equipment located within the building? (A no answer indicates the equipment is in a separate building.) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
	If the water heating equipment is inside the building, where is it located? <input checked="" type="checkbox"/> Ground Floor <input type="checkbox"/> Basement <input type="checkbox"/> 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? <input checked="" type="checkbox"/> Central <input type="checkbox"/> Multiple <input type="checkbox"/> Combination		

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				

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 34.9x10 ⁵ kwh	= 0 kwh,	0 %	x \$81449.09	= \$ 0
to		to	to		to
upper bound 5 %	x 34.9x10 ⁵ kwh	= 17.5x10 ⁴ kwh,	5 %	x \$81449.09	= \$ 4072.45

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 10.4x10 ⁸ Btu	= 51.9x10 ⁶ Btu,	5 %	x \$7146.89	= \$ 357.34
to		to	to		to
upper bound 10 %	x 10.4x10 ⁸ Btu	= 10.4x10 ⁷ Btu,	10 %	x \$7146.89	= \$ 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.

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.*

[illegible]

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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.		NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS	ENERGY COST SAVINGS	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	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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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				
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°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°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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OPTIONAL: OPTIONAL:

ITEM NO	CLASSIFICATION NO		NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS	ENERGY COST SAVINGS	DATE OF IMPLEMENTATION
	MAJOR CLASS	SUB CLASS				
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 the 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 areas: ammonia room, chlorine room, polymer room, room below lime slaker, sludge pump room.			

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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				
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 maintenance 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.			August, 1979
53	5	1	Review the record books on a regular basis.			August, 1979
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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OPTIONAL: OPTIONAL:

ITEM NO	CLASSIFICATION NO		NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS	ENERGY COST SAVINGS	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 warm 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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MINI-AUDIT REPORT

FORM NO. MIN-01

CONTACT DATA	BUILDING NAME Water Reservoir - Pump House		NAME OF ORGANIZATION City of Bloomington		DATE 6-11-80
	BUILDING ADDRESS 2200 West 82nd Street		ADDRESS 2215 West Old Shakopee Road		
	CITY Bloomington, MN	ZIP CODE 55431	CITY Bloomington, MN	ZIP CODE 55431	
	PERSON COMPLETING FORM Randy Smith		TELEPHONE (612) 935-6901	CONTACT PERSON Arthur Jensen	
				TELEPHONE (612) 881-5811	

BUILDING ELIGIBILITY CODE	B 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 <input checked="" type="checkbox"/> Public (PUB) <input type="checkbox"/> Non-Profit Association (NAP)	2. ULTIMATE OWNER <input type="checkbox"/> County (CNTY) <input checked="" type="checkbox"/> City (CITY) <input type="checkbox"/> Township (TOWN) <input type="checkbox"/> State (STAT) <input type="checkbox"/> Public School (PUSC) <input type="checkbox"/> Private School (PRSC) <input type="checkbox"/> Non-Profit Association (NPAP) <input type="checkbox"/> Indian Tribe (INDN)	3a. SCHOOLS <input type="checkbox"/> Elementary (SCHL-ELM) <input type="checkbox"/> Secondary (SCHL-SECD) <input type="checkbox"/> Coll. or Univ. (SCHL-POST) <input type="checkbox"/> Vocational (SCHL-VOCL) <input type="checkbox"/> Education Agency (SCHL-ADMN) <input type="checkbox"/> Administration (SCHL-ADMN) <input type="checkbox"/> OTHER (SCHL-OTHR)	c. LOCAL GOVERNMENT <input type="checkbox"/> Office (LOGG-OFFC) <input type="checkbox"/> Storage (LOGG-STRG) <input type="checkbox"/> Service (LOGG-SERV) <input type="checkbox"/> Library (LOGG-LBRY) <input type="checkbox"/> Police (LOGG-PLCE) <input type="checkbox"/> Fire (LOGG-FIRE) <input checked="" type="checkbox"/> OTHER (LOGG-OTHR)
		b. PUBLIC CARE <input type="checkbox"/> Nursing Home (PBCR-NURS) <input type="checkbox"/> Long Term Care (PBCR-TERM) <input type="checkbox"/> Rehab. Facility (PBCR-RHAB) <input type="checkbox"/> Public Health Ctr. (PBCR-HCTR) <input type="checkbox"/> Res. Child Care Ctr. (PBCR-RCCC)	d. HOSPITALS <input type="checkbox"/> General (HOSP-GENL) <input type="checkbox"/> Tuberculosis (HOSP-TUBR) <input type="checkbox"/> OTHER (HOSP-OTHR)	

MINI-AUDIT FUNDING REQUEST	C 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.
	<p>If eligible for both Federal and State Funding:</p> <p>Have you received a mini-audit grant before? Yes <input checked="" type="checkbox"/> No <input checked="" type="checkbox"/></p> <p>Have you previously applied for mini-audit funding? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Do you wish to apply for mini-audit funding? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>Date: _____</p> <p>Name: _____</p> <p>Signature: _____</p> <p>If eligible for Federal funding only:</p> <p>Have you received a mini-audit grant before? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Have you previously applied for mini-audit funding? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Do you wish to apply for mini-audit funding? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>The 50% match for Federal funds will come from: (Use additional sheets if necessary.)</p> <p>Date: _____</p> <p>Name: _____</p> <p>Signature: _____</p>

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.

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 save at least 20% of the building's energy consumption as specified in section I. (did, did not)

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

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 undergo further analysis of the renewable resources — waste, wind, wood. (Circle proper resources) (should, should not)

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

Signature

206

Building Organizational Authority (Print or Type)

Rieke Carroll Muller Assoc., Inc.

Firm Name (if none, enter none)

Signature

Date

P.O. Box 130 Hopkins, MN 55343

Address

(612) 935-6901

Phone

6-11-80

Date

AUDIT TEAM	NAME	POSITION	ORGANIZATION
	Randy Smith	Certified Mini-Auditor	Rieke Carroll Muller Assoc., Inc.
	Craig Hoffman	Plant Manager	City of Bloomington

BUILDING INFORMATION	G	
	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		

SOLAR POTENTIAL INFORMATION	H	
	INSTRUCTIONS: Correctly answer the following questions for the building being mini-audited.	
	Is there open land adjacent to the building? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> 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: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No South facing Wall: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
	If the roof or wall are partly shaded, what percentage of the surface is unshaded? % of roof unshaded _____ % % of south facing wall unshaded <u>80</u> %	
	What is the overall shape of the building? <input type="checkbox"/> square <input checked="" type="checkbox"/> rectangle <input type="checkbox"/> H-shaped <input type="checkbox"/> E-shaped <input type="checkbox"/> other (specify) _____	
	Is the roof of the building flat or pitched? <input checked="" type="checkbox"/> flat <input type="checkbox"/> pitched	
	If pitched, what is the compass orientation of the ridge line? _____	
	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? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
	What is the exterior facing material for the south facing wall? <u>Face Brick</u>	
	What percentage of the south facing wall is glass? <u>10</u> %	
	Is the building's space heating equipment located within or on the building? (A no answer indicates the equipment is in a separate building.) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
	If the space heating equipment is inside the building, where is it located? <input checked="" type="checkbox"/> Ground Floor <input type="checkbox"/> Basement <input type="checkbox"/> Roof <input type="checkbox"/> Other (specify) _____	
	Is the building's water heating equipment located within the building? (A no answer indicates the equipment is in a separate building.) <input type="checkbox"/> Yes <input type="checkbox"/> No <u>None</u>	
If the water heating equipment is inside the building, where is it located? <input type="checkbox"/> Ground Floor <input type="checkbox"/> Basement <input type="checkbox"/> 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? <input type="checkbox"/> Central <input type="checkbox"/> Multiple <input type="checkbox"/> Combination		

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 year in 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 513600 kwh	= 0 kwh	0 %	x \$ 17847.28	\$ 0
to		to	to		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		to	to		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.

SAVINGS ESTIMATION

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:

[illegible]

Note: Reproduce this page as necessary.

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				
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°F maximum occupied, 60°F maximum unoccupied during the heating season.			
16	3	2	Overhead heaters should direct heat to floors.			
17	3	3	Inspect and lubricate bearings 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.			

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Note 2 Reproduce this page as necessary

NEW OPPORTUNITIES

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OPTIONAL: OPTIONAL:

[illegible]

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Note: 2. Reproduce this page as necessary.

MINI-AUDIT REPORT

FORM NO. MIN-01

CONTACT DATA	BUILDING NAME Pumping Station		NAME OF ORGANIZATION City of Bloomington		DATE 5-23-80
	BUILDING ADDRESS 9310 Poplar Bridge Road		ADDRESS 2215 West Old Shakopee Road		
	CITY Bloomington, MN	ZIP CODE 55437	CITY Bloomington, MN	ZIP CODE 55437	
	PERSON COMPLETING FORM Randy Smith		TELEPHONE (612) 935-6901	CONTACT PERSON Arthur Jensen	
				TELEPHONE (612) 881-5811	

BUILDING ELIGIBILITY CODE	B 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 subcategory befitting the building function.					
	1. OWNERSHIP TYPE <input checked="" type="checkbox"/> Public (PUB) <input type="checkbox"/> Non-Profit Association (NAP)		3a. SCHOOLS <input type="checkbox"/> Elementary (SCHL-ELM) <input type="checkbox"/> Secondary (SCHL-SECD) <input type="checkbox"/> Coll. or Univ. (SCHL-POST) <input type="checkbox"/> Vocational (SCHL-VOCL) <input type="checkbox"/> Education Agency (SCHL-ADMN) <input type="checkbox"/> Administration (SCHL-ADMN) <input type="checkbox"/> OTHER (SCHL-OTHR)		c. LOCAL GOVERNMENT <input type="checkbox"/> Office (LOGG-OFFC) <input type="checkbox"/> Storage (LOGG-STRG) <input type="checkbox"/> Service (LOGG-SERV) <input type="checkbox"/> Library (LOGG-LBRY) <input type="checkbox"/> Police (LOGG-PLCE) <input type="checkbox"/> Fire (LOGG-FIRE) <input checked="" type="checkbox"/> OTHER (LOGG-OTHR)	
	2. ULTIMATE OWNER <input type="checkbox"/> County (CNTY) <input checked="" type="checkbox"/> City (CITY) <input type="checkbox"/> Township (TOWN) <input type="checkbox"/> State (STAT) <input type="checkbox"/> Public School (PUSC) <input type="checkbox"/> Private School (PRSC) <input type="checkbox"/> Non-Profit Association (NPAP) <input type="checkbox"/> Indian Tribe (INDN)		b. PUBLIC CARE <input type="checkbox"/> Nursing Home (PBCR-NURS) <input type="checkbox"/> Long Term Care (PBCR-TERM) <input type="checkbox"/> Rehab. Facility (PBCR-RHAB) <input type="checkbox"/> Public Health Ctr. (PBCR-HCTR) <input type="checkbox"/> Res. Child Care Ctr. (PBCR-RCCC)		d. HOSPITALS <input type="checkbox"/> General (HOSP-GENL) <input type="checkbox"/> Tuberculosis (HOSP-TUBR) <input type="checkbox"/> OTHER (HOSP-OTHR)	

MINI-AUDIT FUNDING REQUEST	C 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.	
	<p>If eligible for both Federal and State Funding:</p> <p>Have you received a mini-audit grant before? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>Have you previously applied for mini-audit funding? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Do you wish to apply for mini-audit funding? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>Date: _____</p> <p>Name: _____</p> <p>Signature: _____</p> <p>If eligible for Federal funding only:</p> <p>Have you received a mini-audit grant before? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Have you previously applied for mini-audit funding? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Do you wish to apply for mini-audit funding? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>The 50% match for Federal funds will come from: (Use additional sheets if necessary.)</p> <p>Date: _____</p> <p>Name: _____</p> <p>Signature: _____</p>	

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 save at least 20% of the building's energy consumption as specified in section I. (did, did not)

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 be the subject of a maxi-audit. (should, should not)

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 undergo further analysis of the renewable resources — waste, wind, wood. (Circle proper resources) (should, should not)

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

Building Organizational Authority (Print or Type)

Signature

Rieke Carroll Muller Assoc., Inc.

Firm Name (if none, enter none)

Date

P.O. Box 130 Hopkins, MN 55343

Address

(612) 935-6901

Phone

5-23-80

Date

**MINI-AUDIT
STATEMENTS**

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

BUILDING INFORMATION	G	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	

SOLAR POTENTIAL INFORMATION	H	INSTRUCTIONS: Correctly answer the following questions for the building being mini-audited.
		Is there open land adjacent to the building? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> 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: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No South facing Wall: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
		If the roof or wall are partly shaded, what percentage of the surface is unshaded? % of roof unshaded _____ % % of south facing wall unshaded <u>80</u> %
		What is the overall shape of the building? <input type="checkbox"/> square <input checked="" type="checkbox"/> rectangle <input type="checkbox"/> H-shaped <input type="checkbox"/> E-shaped <input type="checkbox"/> other (specify) _____
		Is the roof of the building flat or pitched? <input type="checkbox"/> flat <input checked="" type="checkbox"/> pitched
		If pitched, what is the compass orientation of the ridgeline? <u>East - West</u>
		If pitched, what is the angle that the roof makes with horizontal? <u>30</u> °
		Are there large obstructions on the roof such as chimneys, rooms for mechanical equipment, ventilating units, water towers, etc? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
		What is the exterior facing material for the south facing wall? <u>Face brick</u>
		What percentage of the south facing wall is glass? <u>10</u> %
		Is the building's space heating equipment located within or on the building? (A no answer indicates the equipment is in a separate building) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
		If the space heating equipment is inside the building, where is it located? <input checked="" type="checkbox"/> Ground Floor <input type="checkbox"/> Basement <input type="checkbox"/> Roof <input type="checkbox"/> Other (specify) _____
		Is the building's water heating equipment located within the building? (A no answer indicates the equipment is in a separate building) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
		If the water heating equipment is inside the building, where is it located? <input checked="" type="checkbox"/> Ground Floor <input type="checkbox"/> Basement <input type="checkbox"/> 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? <input checked="" type="checkbox"/> Central <input type="checkbox"/> Multiple <input type="checkbox"/> Combination	

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			

20% SAVINGS
DATA

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.

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) _____

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		to	to		to
upper bound 5 %	x 168638 kwh	= 8431.9 kwh	5 %	x \$ 4600.50	= \$ 230.03

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		to	to		to
upper bound 10 %	x 36.7×10^6 Btu	= 36.7×10^5 Btu	10 %	x \$ 994.72	= \$ 88.47

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.

SAVINGS
ESTIMATION

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:

[illegible]

8. to reproduce this report as necessary

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.		NEW MINI-AUDIT OPPORTUNITIES	ENERGY SAVINGS	ENERGY COST SAVINGS	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	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 grilles). They should be kept clean and			

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				
			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.			August, 1979
29	5	1	Review the record books on a regular basis.			August, 1979
30	6	2	All electric heating equipment should be checked for corroded elements and loose connections and repaired 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 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.

Instructions: Read through the energy conservation recommendation list provided. Then walk through the building with this 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.*

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Note 2: Reproduce this page as necessary.