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Condensed Report on the Project

**CASE STUDIES OF SUSTAINABLE LIVING
IN NORTHEAST MINNESOTA**

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TABLE OF CONTENTS

I. PROJECT BACKGROUND.....	3
A. Project Summary.....	3
B. Project Goals	3
C. Project Need and Relevance to NE Minnesota.....	3
II. SYNOPSIS OF PARTICIPANT’S LIFESTYLE.....	4
A. David and Lise Abazs.....	4
B. Thomas Chapman Family.....	9
C. Ken and Molly Hoffman.....	14
D. Joe and Jane Jewett.....	20
E. Mark and Melinda Spinler.....	25
III. CASE STUDY FINDINGS.....	31
A. Definition of Sustainable Living.....	31
B. Ten Characteristics of a Sustainable Lifestyle.....	31
C. Ten Characteristics with Examples from the Case Studies Research.....	32
D. Pros and Cons for Sustainable Living.....	37
E. Steps to a Sustainable Lifestyle.....	40
CONTACT INFORMATION.....	42

I. PROJECT BACKGROUND

A. Project Summary

Ways of Wisdom has completed work on a study of five families who practice sustainable living in Northeast Minnesota. This study was funded through a grant from the Northeast Minnesota Sustainable Development Partnership (NMSDP). This report is a condensed version of the full report submitted to the Partnership in July 2002. The condensed version includes the discussion of each participant's lifestyle and has photographs taken from site visits to their homestead. This version also contains the study's conclusions about sustainable living, based on the research that was conducted on each of the five families. It does not include sections from the comprehensive report on Project Partners, Case Studies Methodology, Outcomes of Case Studies Project, or the Attachment section. If people are interested in these subjects they can either contact Ways of Wisdom or NMSDP. Contact information is located on the final page of this report.

The case studies that were conducted focus on how each of the five families cope with such issues as food, energy, shelter, finances, community, transportation, and waste disposal. This study included people living in rural or wilderness areas of Northeast Minnesota. The participants are comprised of both farmers and homesteaders. The case studies examine how and why these individual families are living sustainably. The findings from the study, based on the research of the five families, include a list of ten characteristics of sustainable living, as well as the pros and cons for the sustainable lifestyle.

B. Project Goals

The goal of this project was to identify families living sustainably in Northeast Minnesota and to study their lifestyles to gain an understanding of how and why they live this way. Families included in the study earn at least a portion of their income from resources on their own property, have an ethic of stewardship, employ appropriate technologies, practice self-reliance, and cooperate with others in their community. The results of the study are being shared with people living in this region through a written report and a local workshop that has been presented at the University of Minnesota in Duluth (UMD). The objective of this study is to inform residents of Northeast Minnesota on the benefits and challenges of the sustainable lifestyle and show them how they can take practical steps to live this way if they choose.

C. Project Need and Relevance to NE Minnesota

As the population of Minnesota grows there will be increased pressure on the rural/wilderness environment. This is especially true in Northeast Minnesota where people choose to live year-round or have a second home. In order to perpetuate both a healthy environment and maintain a balanced use of renewable resources it is vital that people have information on and examples of how to live sustainably in this part of the state. Many people visit Northeast Minnesota as tourists and then make a choice to live here. Some want to homestead and others desire to enjoy an outdoor life. Individuals who have lived in urban environments may not be aware of the economic challenges that a life in remote areas can present. For example, the Cook County, Minnesota median income is \$10,000 lower than in the Twin Cities. A sustainable lifestyle allows people to live comfortably on less money while maintaining a productive and creative life. This study of sustainable living in the rural/wilderness areas of Northeast Minnesota is intended to provide people with information on how and why others have adapted their lifestyles to the unique nature of the north woods. The opportunity is then to share this information with people who want to live more sustainably or gain a better understanding of why people choose this lifestyle.

II. SYNOPSIS OF PARTICIPANT'S LIFESTYLE

A. David and Lise Abazs

Number in Household: There are four members in the household: David and Lise, both age 37 and their two sons, Colby age 10 and Tremayne age 8.

Education: Both David and Lise graduated from a small liberal arts college in North Carolina. Colby and Tremayne are being home schooled.

Originate from: David is from Long Island, New York and Lise is from Rockford, Minnesota. They met at college and moved to their homestead in 1989.

County of Residence: They live in Lake County about three miles from Finland (pop. 400).

Homestead: Their property named Round River Farm is 40 acres in size. David and Lise renovated a run down Finnish homestead and have turned it into a holistic sustainable farm (Photo 5, 6, 8). The terrain is very rocky and they have literally used a pickax at times to work the 8 to 24 inches of sandy loam that covers the bedrock.

Employment: They have chosen to have a diverse income base that harmonizes with their values. During the summer they operate a "community supported agriculture" (CSA) business (Photo 2, 3). They began this three years ago by selling 16 shares to people who wanted to purchase garden produce from them. They now sell 20 shares that feed 30 families, who are mostly former customers from a farm stand they sold produce from up to three years ago. The shares are offered for a 16-week season. They have sponsored internships on their homestead, which allows people the opportunity to learn about sustainability and contribute to the operation of the farm.

David and Lise have other seasonal income producing activities like wild ricing and Christmas wreath making. Lise works part-time managing the gift shop at nearby Wolf Ridge Environmental Learning Center. David owns and operates Round River Alternatives, a solar and wind power business that includes graywater system design and kits. David also serves on the board of the Organic Consumers Association (Purefoods.org). David has taught a college course at Wolf Ridge and both of them teach homesteading skills through the North House Folk School in Grand Marais.

Financial Systems: They treat their farm as a business but decided to not try to make a living exclusively from the farm because they didn't want to compromise their decision making based on economics. Essentially they didn't want to run the farm into the ground trying to make it pay for everything by its self. They have chosen to diversify their income base so they are not dependent on only one source of money. David and Lise say, "things that don't pay, don't stay". They are getting away from livestock because they are not close enough to markets for it. They learn do-it-yourself skills to save money and eventually make money.

Food Systems: Their homestead is a working farm that produces fruit, vegetables, and livestock (chickens, pigs and lamb). The animals do produce meat but they have other purposes like insect control/chickens, land preparation/pigs, fiber and milk production/sheep and goats. They get

fresh eggs from the chickens and the goats produce milk. David and Lise gather natural foods like wild rice. They support area farmers, for example buying grain from a farm near Grand Rapids, and try to buy regionally. They belong to a food-buying club and purchase things they do not grow, like oils, nuts, grains, dry beans and peanut butter through North Farm Cooperative. David and Lise agree with the Wendell Berry quote: “A good farmer sells what he cannot eat and a poor farmer eats what he cannot sell”.

Energy Systems: Round River Farm is not connected to the utility grid so they have to produce the power they use on their homestead. David installed a 1500-watt Whisper wind generator (Photo 4) and also a 760-watt photovoltaic array of solar panels on the south side of the house (Photo 1). The wind generator serves as a backup for the solar panels. During the summer the panels produce over 3000 watts per day, but in the winter, with shorter days and less sunlight, the panels only produce 1500 watts per day. On cloudy days and in the winter there is often sufficient wind to produce power from the wind generator.

David and Lise installed a water-pumping windmill over their well (Photo 10). This saves energy by using the wind to pump water rather than using electricity. For heating the house the homestead has an outdoor wood-burning furnace. This circulates hot water to a centralized heating system in the house. For meals they cook with wood in the winter and propane gas in the summer. They also have a solar oven that uses the Sun’s energy to cook the food. The summer of 2002 they will be installing a soapstone masonry heating cooking wood stove that will consume 1/5 the wood and burn it cleaner than the outdoor furnace used until now. It will also replace the cast iron cook stove they currently use for winter cooking.

They just replaced a propane refrigerator with a super-efficient electrical one. Refrigeration is used only in the summer for the vegetables and dairy products. In the winter, they use a smaller insulated box with an access door in the kitchen and the back side of the box exposed to the outdoors. The refrigerator and a deep freezer are kept on a porch to take advantage of the cooler outdoor temperatures. David and Lise have focused on energy conservation and the use of non-electric or super-efficient appliances to reduce their need for electricity. If they had not done this, the renewable energy system (wind generator and photovoltaic panels) would have needed to be much larger and would have cost considerably more money. They use about 10 gallons of gas each year for rototilling the gardens. They are researching the use of hydrogen fuel cell technology to produce electricity in the future and methane or hydrogen for replacing the cooking propane.

Shelter Systems: All structures on the property were built by the David and Lise except for an existing small cabin they fixed up to live in when they first moved to the farm (Photo 10). They now live in a two- story house that has an attached greenhouse that is used for starting seedlings (Photo 8). The house contains living quarters on the upper levels and the heating, power management and water storage systems on the lower level.

After practicing their building skills on a stone and wood sauna, the first large structure they built was a timber frame barn on a slip form stone foundation (Photo 6, 7). David taught himself how to do the timber framing from reading books on the subject. The barn has been used to house both large and small animals such as draft horses and goats. Other buildings on the farm include a chicken coop, a sauna, and a season-extending greenhouse for tomatoes and peppers (Photo 3, 5) and a sauna.

Transportation: The only vehicle David and Lise drive is a 10-year-old fuel-efficient small truck. They want to get away from using fossil fuel for transportation. David has been researching alternative powered vehicles, particularly one that uses compressed air. They walk when it is practical and Lise sometimes rides an electric bike to work at Wolf Ridge. They bunch trips or carpool with neighbors to reduce the need for gasoline.

Water Systems: As has been previously mentioned the farm has a refurbished old prairie wind mill (Photo 10) that sits over the well on an elevation above the new house. Water that is pumped by the wind mill gravity flows downhill to large holding tanks in the basement of the house. From there water is pressurized and pumped to the sinks, laundry and shower in the house using a jet pump located near the tanks in the basement. The graywater that drains from the sinks, laundry and shower is processed through a unique graywater treatment system that David designed and sells through Round River Alternatives. The system called SymbioSystem treats the graywater first in a conventional septic tank and then in a pod filter tank. The clarified graywater is then pumped out of the pod filter tank and distributed through a drip irrigation system to water the home greenhouse (Photo 8) and trees in the orchard. Round River Alternatives sells a complete manual for SymbioSystem that includes consultation. Information on this unique system can be found on the Web at <http://www.round-river.com>. Another source of water for the gardens is roof catchment that is collected from the barn's metal roof and stored in a large plastic tank behind the barn (Photo 9).

Waste Management: David and Lise initially installed a Sun Mar composting toilet in the house. After some experience with the toilet's composting system they retrofitted it so the waste went into a compost pit. The compost from the house is put onto trees. There is an outhouse near the old cabin that can be used by guests. David and Lise try not to generate waste so they buy in bulk to reduce packaging waste. They recycle glass, metal, plastic and paper through the Lake County recycling program. They reuse bags and other items to avoid disposing of them.

Community Interaction: David and Lise started a non-profit heirloom seed saving operation called the Shalom Seed Sanctuary. David has served on their township board and is a volunteer firefighter. He also serves on the board of directors of the Northeast Minnesota Sustainable Development Partnership and the Organic Consumers Association, and is involved with the Sustainable Farming Association and the local historical society. Lisa operates behind the scenes to David's numerous activities.

Exercise and Recreation: Operating an organic farm, raising two active boys, coupled with walking and bike riding provide plenty of exercise for David and Lise. For recreation they enjoy travel both at home and abroad. They incorporate travel with home schooling lessons for Colby and Tremayne.

Life Philosophy: The family has an ethic of sustainability and kindness to the environment. They believe family life should be sane and they want to be economically secure. They have worked hard to build their "base" where their needs are met. Now they look to fulfill their "wants" without compromising their values. Their goal is to create a balance between work and recreation but admit they are still working on this. After 10 years on the farm they finally took their first major vacation. True to their ecological values they choose to deliver the CSA food shares to their local customers instead of having each family drive to Round River Farm.

ABAZS HOMESTEAD PHOTOS



Photo 1 - Abazs solar panels.



Photo 2 - Abazs CSA garden.



Photo 3 - Abazs CSA greenhouse.



Photo 4 - Abazs wind generator.



Photo 5 - Abazs homestead: garden, greenhouse, barn and house.



Photo 6- Abazs timber frame barn exterior.



Photo 9 - Abazs barn roof water catchment system with water holding tank.



Photo 7- Abazs timber frame barn interior.



Photo 10 - Abazs windmill for water pumping and original farmhouse that was renovated when they first moved to the farm.



Photo 8 - Abazs house with solar hot water collectors (left foreground) and attached greenhouse (center-right foreground).

B. Thomas Chapman Family

Number in Household: There are five people in the household: Tom (59) and Pat (51) and their three daughters Elizabeth (23), Anna (21), and Rebekah (18).

Education: Tom holds a Bachelor of Fine Arts degree in Industrial Design from the Cleveland Institute of Art. Pat has an Associate of Science Degree from Monroe, Michigan Community College and a Child Development Associates Degree from Bemidji State University. She has home schooled all three daughters through high school. Tom and Pat recently became licensed ministers. Elizabeth is earning her bachelor's degree in business from the University of Minnesota through online studies. Anna is taking classes online from Rochester Community College in computer graphic design and has designed the web site for the girls' dog business. Rebekah has one more year of home schooling left before completing high school.

Originate from: Pat and Tom come from southern Michigan and the Toledo, Ohio area.

County of Residence: The family lives in St. Louis County about 5 miles from the town of Cook. Their address is Angora, which is just a post office. They are 2 hours north of Duluth and 1.25 hours south of Canada. They moved to their homestead 28 years ago.

Homestead: They own 80 acres, of which 30 acres are wetlands. They logged 55 acres one winter. The homestead is the site for all the family businesses and it has a large garden.

Employment: Tom has been successfully self-employed as a graphic artist. He presently designs signs (Photo 4) and does silk screen work which includes rice bags for international markets and garments. He is looking forward to fine art painting and computer web design; a new web site is coming soon, <http://www.ausjc.com>. Their first source of income was designer cards and printed stationary. Tom illustrated and Pat wrote a book, "Discovery, Northern Minnesota", which aired over Minnesota Public radio. Pat serves as their Township Clerk and occasionally does resort work.

Elizabeth, Anna and Rebekah together have developed a comprehensive dog business named Sweet Wind Kennel. The business involves mushing and racing dogs in the winter (Photo 1, 7) along with dog grooming, boarding kennels (Photo 2) and training. They have done canine agility training in the past (Photo 3). The girls sell high quality dog food as well. They have a web site for their dog business that can be found at <http://www.swdogs.com>.

All the family enterprises are run out of a small high tech office in the home. The Chapmans have five computers that are used for business and on-line educational classes. The whole family pitches in and helps each other with their respective business ventures.

Financial Systems: The family is very frugal and prefers to buy used appliances and equipment when they can. They like to barter goods and services instead of exchanging money. Tom and Pat once traded an old Chevy Suburban for a load of gravel. They have also bartered for vacations, paneling and wood. They have a do-it-yourself philosophy. They once made a beautiful stone wall in the living room from bartered slate rather than buy a commercial product from a lumber

company and hire someone to install it. They make their own clothing (Photo 8), furniture and gifts, like homegrown and crafted herbal wreaths. The family has a pay-as-you-go philosophy and avoid debt or pay it off as soon as they are able.

Food Systems: The homestead has a large vegetable garden that supplies about half of their food. They eat fresh produce from their garden during the summer and freeze what they don't eat. They cook from scratch and eat substantial, if not elaborate, meals. Tom and Pat belong to a buying club and purchase bulk grain from North Farm Cooperative. The family doesn't have food producing livestock but they do get meat, dairy, eggs, and apples from neighbors. Their limited income helps the family avoid junk food.

Energy Systems: For their first five years in Northern Minnesota Tom and Pat didn't have electricity or hot water. They used kerosene lamps for lighting. Their modern homestead now has off-peak electric heat but they use a wood stove for the primary heat source. The house uses propane for cooking and heating of hot water. The kitchen also uses electricity to power a microwave and crock-pot used in cooking. The family is very conscientious about turning off lights that are not being used. The house (Photo 5) was designed and built with south-facing windows to take advantage of passive solar heating in the winter. The Chapmans are researching renewable energy systems that they may incorporate into their homestead.

Shelter Systems: The house, workshop, outbuildings and kennels make up the homestead's buildings (Photo 5, 7). These were all designed and built by the family in increments over the past 20 years. Tom and Pat built the two-story family home (Photo 5, 6), with the help of neighbors, using wood from a local sawmill. The attached carport was converted into an enclosed workshop for Tom's sign business (Photo 4, 5). Elizabeth, Anna and Rebekah designed the kennel buildings (Photo 2, 7) and dog runs. They also designed the props used in the canine agility-training portion of their business (Photo 3).

Transportation: The family has two vehicles, a 1995 Neon and a diesel F350 Ford pickup truck that is used to haul mushing dogs and Tom's signs. Since they work at home they don't need to drive every day. They bunch up errands when they go to Cook or Virginia. In the winter they even use the mushing teams to travel to Cook, the nearest town. Because their home is set back from the county road they had to construct their own driveway so they could get in and out of their property.

Water Systems: The house now has a well and septic system but in the early years they had to haul in water. Everyone bathed out of a five-gallon pail. The babies were first and then the adults. They use some of their graywater now to water flowers.

Waste Management: Tom and Pat started with an outhouse when they first moved to their homestead and would like to have one again for large gatherings. They compost food and garden waste and use the compost for a soil amendment.

Community Interaction: The family is very involved with their church. Tom and Pat have done missionary work in Haiti and are actively involved with helping people in that nation. Pat serves as the Township Clerk and Tom is one of the Township Supervisors. Tom, Pat, Elizabeth, and

Anna are adult leaders in the local 4-H club. Elizabeth and Anna teach 4-H classes to younger children on dog training and agility. They have also taught dog training workshops through the Elder Hostel program. The girls and their dog business have been featured on such national and regional television programs as Zoom, a PBS kids program, and Venture North from Minnesota Public Television.

Exercise and Recreation: The Chapman family makes its own fun from building snow caves, to playing music, to creating fine arts and crafts. They are all avid readers, especially Elizabeth. The girls compete in sled dog races during the winter and have enjoyed State Fair projects and regional and state dog shows through 4H. They are never bored.

Life Philosophy: The members of the Chapman family all feel the spiritual aspect of life is most important. They have committed their lives to Jesus Christ and put God first. They have a service to others philosophy and believe the more you give the more you receive. When they are dealing with people they put Biblical principles to work. The Chapmans know that God is the One who helps them through difficult times and meets all of their needs.

The family has a do-it-yourself attitude when it comes to accomplishing anything. They have the ability to learn how to do new things. Rebekah, the youngest daughter, has learned to weld aluminum and Anna the middle daughter designed and maintains the Sweet Wind Kennel web site. The Chapmans understand that when you can do things for yourself you not only gain satisfaction from the work but you also save money. The Chapmans are truly a dynamic, creative and energetic family.

CHAPMAN HOMESTEAD PHOTO



Photo 1 - Chapman sled dogs.



Photo 4 – Chapman sign business shop.



Photo 2 – Chapman dog kennel.



Photo 5 – Chapman house and sign shop on left.



Photo 3 – Chapman dog agility training area.



Photo 6 – Chapman living room of house.



Photo 7 – Chapman puppy building and dog runs.



Photo 8 – Chapman dog trophies and bulk cloth for sewing projects.

C. Ken and Molly Hoffman

Number in Household: There are two people in the household, Ken age 62 and Molly age 55.

Education: Both are college educated. Ken has an engineering degree from Cornell University and Molly has a degree in biology from the University of Minnesota in Duluth.

Originate from: Ken is from New Jersey and Molly is from Duluth. They met at UMD and lived in Duluth before moving to Cook County in 1980.

County of Residence: They live in Cook County about seven miles west of Grand Marais.

Homestead: Their home is on 50.5 acres that consists of mixed hardwoods and conifers. The Hoffmans home is located 1/3 of a mile from the county road. Everything they need from off homestead sources must be hauled by hand over a narrow path that connects them with the outside world. They are not connected to the electric utility grid. Ken and Molly have a pond and gardens near their home.

Employment: Ken is a self-employed as a part time licensed land surveyor and Molly works with him in the family business. Ken will be retiring on July 1, 2002.

Financial Systems: The Hoffmans live on the small income they make from survey work and other minor sources of income. They have a pay-as-you-go philosophy. Ken and Molly have adjusted their lifestyle so they can live on less and still be comfortable. They barter goods and services, buy in bulk at the local whole foods cooperative, and do without house insurance, which they can't get anyhow. They recently cancelled their telephone service so they could further simplify their lifestyle.

Food Systems: Ken and Molly chose the property they live on because it had better quality soil than most areas of the county. They have painstakingly developed a large integrated organic garden next to their home (Photo 3, 4). The garden grows many varieties of vegetables, herbs, fruits, and berries. Including grapes! The garden was not only created to be functional but beautiful as well. They have many flowers and ornamentals that help create an atmosphere of serenity as you follow the paths that wind through the garden (Photo 3). The Hoffmans have hand built a large root cellar out of cedar timbers that provides for constant temperature storage for crops such as potatoes, carrots, beets, and apples as well as flower bulbs (Photo 5). They produce over 50% of their own food from their garden.

They eat with the seasons and do wildcrafting of mushrooms, chokecherries and other foods from the boreal forest. They buy organic foods from the Cook County Whole Foods Co-op in Grand Marais or through a local food-buying club. Ken and Molly also tap maple trees on their property and boil the sap down to produce maple syrup for their own use. The Hoffmans dry and can their foods so they can store them (Photo 7). Since they do not have utility electricity they cannot freeze garden produce. They cook from scratch and seldom eat out.

Energy Systems: When the Hoffmans built their home they choose a location that was 1/3 mile

from the nearest utility line. Instead of paying the utility to run power lines to the house they decided to reduce their need for electricity and to produce enough of their own power to run lights, small appliances and an energy efficient Sun Frost refrigerator. Ken and Molly installed solar panels on the roof of a storage building next to their house (Photo 1). The power produced is stored in a small battery bank that consists of four golf cart batteries. The batteries are connected to a DC distribution panel. There are 12-volt DC circuits from this panel that provide 98% of the power the Hoffman house uses. The batteries are also connected to a 300-watt inverter that converts the direct current to alternating current for use by three household electrical circuits that account for 2% of their total power usage (Photo 2). The Hoffmans do not have an electric generator because they do not need one. There are more than enough solar panels to keep the four batteries charged that supply power to the house when the sun is not shining. Ken and Molly believe that generators are not an environmentally friendly way to provide electricity or to recharge batteries.

Ken and Molly chose to design and build a small house (Photo 6) that would be less expensive to build and heat than a larger one. The house eaves are constructed to allow in winter sun for passive solar heating but shade the sun in the summer. The house is so energy efficient it can be heated with only one cord of wood during the winter. A small wood stove sits in the living room (Photo 8). Since they do not have a conventional water heater they rely on the wood stove to heat water in the winter. During the warmer months of the year, when they do not need their wood stove for heat, Ken and Molly use a specially designed parabolic dish to heat water, using sunlight (Photo 12).

To store food using a minimum amount of electricity they have the root cellar (Photo 5) and two mouse-proof storage areas. These cold storage areas are in a shed next to their house and the unheated entryway to their house (Photo 6). An attached screen porch can be used for whole house ventilation. A small propane cook stove is used for cooking and canning of garden produce. The Hoffmans even have a solar oven that can cook food using the Sun's energy.

Shelter Systems: The house they designed and built themselves is only 16' by 24' with an 8' by 8' entry way and a similar sized screened porch (Photo 6). The entryway doubles as a food cooler in the winter. There is a mouse-proof shed that is 8' by 14' located opposite the entrance to the house. The shed is used to store bulk foods and off-season clothing and to even dry onions for storage. One of the unique buildings the Hoffmans constructed is a 6' by 9' solar bathhouse (Photo 13) that can be used in three seasons of the year. Without a bathroom in the house another way was found for personal hygiene. The solar bathhouse doubles as a seed starting area and food drying space. Even laundry can be dried on a pull out clothes rack that is attached to the wall.

Other buildings on the property include an old original cabin used to store garden equipment and other bulky items and a sugar shack for boiling down maple sap to make maple syrup. Ken and Molly have an attractive outhouse (Photo 9) and their handmade root cellar, whose dirt mounded roof doubles as a garden space for berry bushes (Photo 5). All the buildings were constructed without power because the Hoffmans enjoy using hand tools.

Transportation: Ken and Molly are homebodies who travel only when necessary. They bunch

up errands so they can get a lot done on a trip to town. The Hoffmans summarized their transportation needs as follows. “We have chosen to drive as small and efficient a vehicle as our needs allow. It’s easier on the planet. The car has been used for work and non-work uses. We put roof racks on when we need to haul larger items. It has been probably the only Honda Civic hatchback survey “truck” in Minnesota” They also enjoy walking or snowshoeing to visit their neighbors.

Water Systems: The Hoffmans have a well next to their house that has a hand pump on it (Photo 11). They heat water in the parabolic dish (Photo 12) and use it for bathing or laundry. The excess water is thrown on the garden. In the house they have a marine style water faucet that has a lever that can be moved back and forth to pump water out of an eighteen gallon water reservoir under the kitchen sink (Photo 14). Water used in the garden is collected from the roof of the house and stored in 32-gallon plastic garbage cans (Photo 10). The water is collected and stored at an elevation above the garden so they can use gravity to drain the water through a hose to water the garden.

Waste Management: Food waste and garden debris is composted and used to amend the garden soil. Dead trees are cut up and used for winter firewood. Ken and Molly do not have a septic system so they rely on their outhouse (Photo 9). An outhouse is far less expensive to build compared to a septic system. This also eliminates the need for a sophisticated household plumbing system. Non-compostable glass, plastic, metal and paper products are recycled through the Cook County Recycling Center in Grand Marais. Molly recycles old cloth items into rag rugs. Currently the Hoffmans plan to construct another storage building using recycled wood from another building.

Community Interaction: Both Ken and Molly contribute time to support community organizations they like. Molly does a birding program and other volunteer work for the local non-profit radio station WTIP. She has been very involved with local environmental issues and both Ken and Molly act as volunteers for the local whole foods cooperative. They maintain close friendships with immediate neighbors and enjoy showing people their sustainable homestead.

Exercise and Recreation: The Hoffmans live a physically demanding life with gardening, homestead projects, and just walking to their car that is parked 1/3 mile from their house. The survey work they do requires them to spend time walking and carrying equipment through the woods in Cook County. For recreation both Ken and Molly enjoy birding, snowshoeing, and any activity in the woods. Both of them play the dulcimer and listening to the radio, since they don’t own a television. Molly likes home crafts like rug making and macramé. The Hoffmans enjoy designing and building small garden ponds and flowerbeds that are everywhere in their large garden. They also swim and bathe in a spring fed pond located on their property.

Life Philosophy: Ken and Molly believe small is better. They have been self-employed and working part time at earning a living so they had the freedom to design, build, and manage their homestead. This gives them more personal and quality time to pursue whatever interests them. They try to avoid psychological stress caused by ongoing bills like mortgage, electric, and even telephone. The Hoffmans recognize that they have an impact on the environment and try to live softly on the land.

HOFFMAN HOMESTEAD PHOTOS



Photo 1 – Hoffman house and shed exterior with solar panels on roof of shed.



Photo 4- Hoffman tomato cage.



Photo 2 – Hoffman energy center with solar panel controls, batteries and inverter.



Photo 5- Hoffman root cellar entrance.



Photo 3 - Hoffman gardens with small pond and footbridge.



Photo 6 - Hoffman house exterior with unheated entrance annex.



Photo 7 - Hoffman home canned garden produce pantry.



Photo 9 - Hoffman privy (outhouse) interior.



Photo 8 - Hoffman house interior with wood stove.



Photo 10 - Hoffman house roof water catchment system and plastic holding containers.



Photo 11 – Molly Hoffman pumping water from the well with the hand pump.



Photo 14 - Hoffman kitchen sink with marine type flipper pump (pumps water from holding tank beneath the sink by moving the lever back and forth).



Photo 12 - Hoffman solar hot water heating parabolic dish.



Photo 13 - Hoffman solar bathhouse that is also used as a laundry and plant starting hothouse.

D. Joe and Jane Jewett

Number in Household: There are four family members. Joe (32) and Jane (31) and their two daughters Selket (3) and Sigrid (1).

Education: Jane has a master's degree from the University of Minnesota in plant breeding and a BS degree in agronomy. Joe has a BS degree from the University of Minnesota in forestry and a vocational technical degree in gunsmithing.

Originate from: Both Joe and Jane were born and grew up in Aitkin County, Minnesota.

County of Residence: The family lives in Aitkin County about 10 miles from the small town of Palisade (pop. 150).

Homestead: The Jewett homestead is a 120 acre farm that produces hay, beef cattle, and hogs. They rent another 80 acres from a neighbor. Their farm is also the location for Joe's sustainable logging operation.

Employment: Jane telecommutes and works quarter time for the Minnesota Institute of Sustainable Agriculture (MISA). She also works out of the home doing statistical work for a University of Minnesota professor. Jane is in charge of the farming operations that consists of hay, beef and direct market of hogs.

Joe is a logger and is creating value-added sustainable wood products that are certified for the "Smart Wood" program. He logs oak, hard and soft maple, birch, and poplar timber (Photo 7), mills it on the homestead (Photo 6), dries the lumber in a kiln (Photo 1), and transports it to market on a long flat bed trailer (Photo 2). Joe has purchased used equipment that will enable him to also plane the rough-cut lumber after it is kiln dried. Joe is looking for new markets for his wood products. For example, finding a crafts market to buy his oak slab wood. Recently he began sawing basswood lumber for sale to the wood craving community. The basswood in their area is the best in the country for carving because it is soft and with little grain.

Financial Systems: Joe and Jane are people who like to do things for themselves. They have recently completed construction on a new two-story house. In order to save \$10,000, Jane taught herself how to do electrical wiring. She designed and installed the home's complicated electrical system and had it approved by the electrical inspector. Joe milled most of the lumber for the house, including the trim, from trees he logged from their own property. The Jewetts try to conserve to save money. They reduce their electric bill by using off-peak electric power and Joe plans to refit the wood drying kiln so he can use slab and waste wood to dry the lumber.

Food Systems: The Jewett farm raises beef, pork, and chicken that provides not only income but also food for their family. They barter by trading a neighbor one hog for milk. Joe and Jane have a large garden and grow as many vegetables as they can. They take advantage of pick-your-own berry operations in their area and regional orchards. The Jewetts purchase wheat berries and grind their own wheat flour. The new house has a large food pantry/cool closet to store produce like potatoes and canned goods. Jane puts up as much as 100 quarts of tomato sauce each year and cans other fruits and vegetables. Joe supplements their food supply by hunting for wild game. They are not committed to eating organic foods

only but do like some organic products like peanut butter. The Jewetts do shop at the organic health food store in Aitkin but also support the locally owned grocery store near their home.

Energy Systems: Their home and farming operation are on the electric utility grid. To save on the cost of drying wood Joe dries lumber outside, or in an open-sided shed, using passive wind and solar energy for the first two months. Then the final drying can be accomplished in 3-4 days using the drying kiln. He is currently heating the kiln with electricity but he plans to convert it over to use wood for heat. Waste wood is available from the logging and lumber milling operation. Joe has looked into solar kilns but they are not practical at their latitude.

Their new home (Photo 5) was designed with passive solar heating using argon filled double glazed windows. The house has electric in-floor heat but they prefer to use the zero clearance fireplace (Photo 3) located in the living room because they can burn wood left over from the logging business. The house is designed with an open floor plan that allows heat to circulate from the living room to the large kitchen next to it (Photo 4) and up the stairway to the second floor. The Jewetts cook with propane gas and use compact or regular fluorescent bulbs throughout the house. In the warmer months they hang clothes out on a line to dry them, rather than use an electric or propane gas clothes dryer.

Shelter Systems: Their new two-store house (Photo 5) was built by the Jewetts using wood sustainably harvested and milled by Joe. There is an older cabin next to the new house that Joe and Jane lived in before the new house was built. The cabin is now being used for storage. There is a newer large pole building that Joe uses for his wood business. Wood can be air dried in the building before being placed in the attached drying kiln (Photo 1). The wood planing equipment and large flat bed trailer (Photo 2) are located in this pole building. On the farm there is also a large open-air pole shed that is used to store farm and logging equipment (Photo 8).

Transportation: Joe and Jane bunch up errands so they don't make unnecessary trips to town. They are very conscientious about gasoline use, especially on the farm. That's why they use the tractor as little as possible. When Jane is doing the haying work she leaves the tractor in the field and rides a bicycle back and forth to the house. The Jewetts have reduced transportation expenses because both of them work at home so they can keep driving to a minimum.

Water Systems: The house has a well that supplies their water.

Waste Management: Their homestead has a well and septic system. When they pump their septic tank they spread the contents on the hay fields. This not only saves money by doing the septic maintenance themselves, but the septic waste fertilizes the fields. The Jewetts make good use of the waste wood left over from the logging and milling operations. This wood is used to heat the house and will be used to dry wood in the kiln. The farm composts animal offal using sawdust left over from the sawmill. They compost garden waste and food scraps and use this for a soil amendment in the garden. Joe and Jane still use cloth diapers for their children rather than going to the expense of purchasing and then discarding disposable diapers.

Community Interaction: Jane is involved with her church and its activities, such as the Lutheran Coalition for Public Policy and teaching confirmation classes. They are active members in the Sustainable Farming Association. Jane serves on the Aitkin County Planning and Zoning Commission.

She handles the “Ask Me” feature of the Minnesota Institute for Sustainable Agriculture. Joe teaches local firearm safety classes. He also helps the industrial arts class in Hill City to build prototype cars that get good gas mileage. Some of the cars get 300 mpg!

Exercise and Recreation: With two young children, a farm and a value-added logging business Joe and Jane have a very active hands on lifestyle that provides plenty of exercise.

Life Philosophy: The Jewett’s definition of sustainable living has three parts: wellbeing of the environment, stable social fabric, and economics so people can live. Being self-employed and working at home gives them the opportunity to raise their children themselves so they do not have to rely on daycare. Joe and Jane like being independent and in control of their own lives and schedules. They don’t have to drive to a job and answer to a boss. It is important to them to carry on their families’ traditions. Joe is a third generation logger and Jane is operating the family farm.

JEWETT HOMESTEAD PHOTOS



Photo 1 - Jewett drying kiln for sawmill lumber (wood is on a cart ready to be moved into the drying room).



Photo 4 - Kitchen of new house built by the Jewetts.



Photo 2 - Jewett pole barn with a trailer of milled lumber ready for delivery to a customer.



Photo 5 – Jewett family and new house.



Photo 3 - Jewett zero-clearance fireplace in unfinished living room of house.



Photo 6 – Jewett Wood Miser sawmill.



Photo 7 – Selket with logs cut for wood mill by Joe Jewett.



Photo 8 – Jewett tractor used for lumber business and farming.

E. Mark and Melinda Spinler

Number in Household: There are two people in the household, Mark who is 43 and Melinda who is also 43.

Education: Mark has a degree in Park Resource Management. Melinda has a Masters degree in Experiential Education.

Originate from: Mark grew up on a family farm near Owatonna, Minnesota. Melinda was in a military family and grew up North Carolina.

County of Residence: Mark and Melinda live about 7.5 miles from Grand Marais in Cook County.

Homestead: The Spinler homestead is located on of 20 acres of boreal forest consisting of mixed hardwoods like maple and birch. Their property is surrounded by state forestlands. The homestead has their house (Photo 6), gardens, out buildings and sugarhouse (Photo 1) for their maple syrup business.

Employment: Mark and Melinda are self-employed and their three businesses are seasonal and all occur at different times of the year. These businesses consist of:

1. Superior North Outdoor Center: This is a bike shop that is located in Grand Marais. They repair and sell new and used bicycles. The Spinlers operate this business primarily during the summer season. The Center provides people with information on bike trails in Cook County.
2. Superior Sweep: This is a chimney cleaning business that also installs new chimneys and repairs old ones. They also can sell new wood stoves to their customers. Mark provides the clients with a safety inspection of their chimney when it is cleaned. There are many individual families and resort businesses that use wood for heat in the county. Firewood is plentiful in the forested areas and cost effective as a heat source compared to propane, fuel oil and electricity. Superior Sweep operates primarily in the fall and winter months.
3. Maple Hill Sugar Bush: The Spinler homestead has maple trees on it and the state land bordering their property also has abundant maple trees. During the late winter and early spring Mark and Melinda collect maple tree sap using a sophisticated network of plastic tubing under vacuum to draw the sap downhill to large stainless steel holding tanks (Photo 9). The sap is then pumped into a large stainless steel evaporator where wood heat is used to first reduce the water content of the sap in large boiling pans (Photo 2). The sap is then concentrated down to a final syrup product in smaller evaporator pans that are directly over the firebox (Photo 10). The maple syrup is reheated over propane burners and the sugar concentration is checked to make sure the sugar content is correct (Photo 2). The finished product is then put through a filtration process to remove particulates before it is bottled for sale (Photo 3). The maple syrup is sold directly to regular

customers and at the Cook County Farm and Craft Market held during May through September in Grand Marais.

In addition to the three businesses operated by the Spinlers, Mark teaches outdoor living skills through the North House Folk School in Grand Marais.

Financial Systems: Mark and Melinda live frugally. The family motto is “Avoid debt like the plague”. As Melinda says “Why spend a lot of money for living nice and fancy when you could be spending that money to tour around the world!” The Spinler prefer to buy used tools, equipment and vehicles. They recycle and find new uses for old things. For example, they bought a used stainless steel dairy tank for their maple syrup operation, rather than purchase a more expensive new one (Photo 9).

Mark and Melinda believe it is best to do as much as you can for yourself and buy the least amount of stuff that you have to. They have avoided catching “affluenza” (rampant consumerism) that affects so many in our modern society. They enjoy the do-it-yourself lifestyle and prefer to fix things themselves. Mark once found a discarded CD player someone had thrown in the scrap metal pile at the landfill. He repaired it himself and they now have a free CD player.

Food Systems: The Spinlers grow about 75% of their own food in the garden next to the house. This garden space had to be cleared of stumps but they were able to find piles of nice topsoil the previous owner had scraped together. The soil has been further amended with compost and manure to enrich it. Food from the garden is canned and frozen for storage. Mark and Melinda have also constructed a small foam-core insulated root cellar in the crawl space under the house that can be conveniently accessed from a trap door in the kitchen floor (Photo 4).

The Spinlers believe in eating organically, whether the food is from their own garden or purchased at the Cook County Whole Foods Co-op in Grand Marais. They also belong to a food-buying club so they can make larger bulk purchases when needed. Meat has to be from a known source or locally processed fish. Mark and Melinda try to purchase regional or local foods and avoid food that is shipped in from thousands of miles away. They both enjoy wild foods foraged locally and are adamant about eating healthy wholesome foods.

Energy Systems: The house (Photo 6) is well insulated and takes advantage of passive solar heat with three large south-facing picture windows. They heat the house with wood during the winter (Photo 5) and do not have a backup heat source. This means that in order to take a day trip to Duluth in the winter they have to wait for a sunny day so the house will keep warm in their absence.

The homestead is on the electric grid but they have a backup power generator they can use if needed. Mark and Melinda try to conserve on use of electricity by using compact fluorescent light bulbs that are well placed over work and reading areas. The Spinlers are very conscious of the importance of windbreaks and siting of buildings. The sugarhouse was placed in an area that doesn't get much sun to keep it cool. They burn salvage wood from local sawmills and logging sites to heat their home and fire the maple syrup evaporator. Plans are in the works for some type of renewable energy system.

Shelter Systems: When they purchased their property there was an existing house on it. They have added on to the house and insulated it for energy efficiency. The sugarhouse (Photo 1) was constructed using lumber milled from trees cleared from their property. Birch from their land was used for paneling, cabinets and floors in the house. Mark and Melinda also have a sauna and storage buildings near the house. They plan to construct a larger root cellar that can be used to keep the maple syrup cool, without refrigeration requiring electricity.

Transportation: The Spinlers have four vehicles that are all over 10 years old. They are paid for and Mark does much of the vehicle maintenance to save money. They have both a 1982 and a 1983 Volkswagen Rabbit (Photo 7). These cars get 45 mpg! For camping and long trips they have a Volkswagen van. Camping allows them to avoid motel costs. Mark uses a Toyota pickup truck for the chimney sweep business that hauls ladders and cleaning equipment. In Grand Marais Mark and Melinda often ride bikes to do errands. Mark is investigating the feasibility of converting the VW Rabbits so they can run on bio-diesel (vegetable oil).

Water Systems: The house has an old pitcher pump that Mark got from his grandmother. It is installed on the counter by the kitchen sink and draws water from an artesian well beneath the house. The Spinlers have an old fashion claw foot bathtub on the second floor of the house. To take showers they fill a shower bag with warm water and hang it over the bathtub (Photo 8). The sugarhouse has a shallow well electric pump that draws water from a drilled well. The pump provides pressurized water for the commercial kitchen, which is required by law.

Waste Management: The house has a graywater drainage system that is connected to a 55-gallon barrel buried in a beach gravel drainfield. Mark and Melinda compost food and garden waste and use it to enrich their garden. They are careful to avoid buying over packaged items, especially at the food store. This is one reason they buy food in bulk. They recycle and reuse items instead of discarding them. They would rather not create the waste in the first place.

Community Interaction: Both of the Spinlers are involved with community groups and projects. Melinda was a co-founder of the Cook County Farm and Craft Market, located in Grand Marais. The market was started to allow artisans and local food producers to sell their goods directly to the customer. This is an example of cooperative economics. Melinda sells their maple syrup products through the market when it is open. She has served as a Director on the Whole Foods Co-op Board and is a volunteer for the Co-op. Melinda helped start the Family Crisis Center in Grand Marais. The Center works to help family members who have been abused. Melinda also is a trained mid-wife and has helped deliver a number of babies.

Mark is a member of the North Shore Music Association. This organization brings alternative quality music to the community. Mark teaches outdoor skills through the North House Folk School. Both of them are involved with the Sustainable Farming Association and the Cook County Children's Trust.

Exercise and Recreation: For exercise Mark and Melinda enjoys bicycling, skiing, canoeing and other outdoor activity like rock climbing. Both of them enjoy and play music. Mark plays a banjo and Melinda plays a dulcimer. They are musicians with a local musical group called Over

the Waterfall that plays Celtic and other music. Melinda finds gardening recreational.

Life Philosophy: The Spinlers have a philosophy to “live and work with the environment as if it is a family member”. They want to give something back to the Earth for all that the Earth has given them. They first made a choice of where and how to live and then decided how they could earn money. They believe it is important to pick your battles, whether it is the issue of genetically modified organisms, sustainable farming or whatever. Mark and Melinda say “things have more value if you do-it-yourself”. Creative needs are fulfilled when you can say; “I made that”.

The Spinlers feel strongly that what you do to yourself, in terms of how you eat and how you behave physically and mentally, determines your overall health. They advocate that we all take responsibility for preventing our own health problems.

SPINLER HOMESTEAD PHOTOS



Photo 1 - Spinler maple syruping building (sugar shack).



Photo 4 - Spinler root cellar located in the crawl space beneath the kitchen of the house.



Photo 2 – Melinda and Mark Spinler in maple sap evaporator room of sugar shack.



Photo 5 - Spinler wood stove in living room of house.



Photo 3 – Melinda Spinler in the sugar shack kitchen, where the maple syrup is filtered and bottled.



Photo 6 - Spinler house exterior.



Photo 7 - Spinler Volkswagen Rabbit that gets 45 mpg.



Photo 9 - Spinler maple sap holding tanks.



Photo 8 - Spinler bathroom with shower curtain and suspended shower bag.



Photo 10 - Spinler maple syrup evaporator pans.

III. CASE STUDY FINDINGS

A. Definition of Sustainable Living

This definition of sustainable living was developed by Ways of Wisdom for the NMSDP grant proposal because we could not find an adequate definition anywhere else. After completing the study we believe this definition accurately describes our participants' lifestyles.

“Sustainable living is a lifestyle that harmonizes both human and environmental ecologies through appropriate technologies, cooperative economics, and individual resourcefulness. It is a deliberate lifestyle that is characterized by personal responsibility, self-reliance, service to others, and a mindful spiritual life. In addition, sustainable living is an ethic of stewardship for the environment and the economy where today's needs are balanced with the needs of future generations of life on the Earth”.

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B. Ten Characteristics of a Sustainable Lifestyle

The following characteristics of sustainable living are based on the study of five families living in rural areas of Northeast Minnesota. These characteristics represent the essential elements of the sustainable lifestyle ascertained from this research project by Ways of Wisdom.

1. Sustainable living is a deliberate lifestyle characterized by resourcefulness, self-reliance, and healthy physical work.
2. The decision on how to live and where to live take precedent over how to earn money.
3. Most income is earned through self-employment that is both creative and diverse.
4. Families earn a portion of their income through resources on their own property or those that are locally available. This would include forest products like timber and maple syrup, farming, gardening, and seasonal recreation.
5. Cooperation with others is more important than competition with others.
6. Financial responsibility leads people to be frugal and avoid debt whenever possible.
7. People have an ethic of stewardship for the environment and are mindful of their responsibility to it.
8. Appropriate technologies, like renewable energy, enable rural families to live a modern lifestyle.
9. Sustainable living allows people to create and maintain their own life support systems such as housing, food, water, heating, and energy systems.
10. People value their time and have the flexibility to create their own schedules. This allows them time for work, family, recreation, quiet time, and volunteering to help in their community.

C. Ten Characteristics of a Sustainable Lifestyle with Examples from the Case Study Research

The following examples for each of the ten characteristics of sustainable living are taken from the case studies research. Other examples can be found by reading the lifestyle synopsis for each of the participating families.

1. Sustainable living is a deliberate lifestyle characterized by resourcefulness, self-reliance and healthy physical work.

Abazs: David and Lise built all structures on their property except for an existing cabin that they renovated. David taught himself how to do timber framing by reading a book. He then proceeded to build his own barn on a slip form stone foundation. David says: "I think we've paid very few people to help us. We paid a plumber once and I watched and learned. Now I do all the plumbing."

Chapman: The Chapmans built their house, kennels, workshop and outbuildings. They make some of their furniture and much of their clothing. They have designed a web site for the dog business and maintain it themselves.

Jewett: The Jewetts have recently completed construction on their modern, two-story house. Joe milled most of the lumber for the house from trees logged off the property. Jane taught herself how to do electrical wiring and designed and installed the home's complicated wiring system that was approved by the electrical inspector.

2. The decision on how to live and where to live take precedent over how to earn money.

Abazs: David grew up on Long Island, New York and knew he wanted to "farm like the Amish" since he was a small boy. Lise is from Southern Minnesota. Both wanted to find an old homestead to regenerate. After considering Maine as a location, they compromised by settling on remote, rocky terrain near Finland, Minnesota.

Chapman: Tom and Pat come from the Toledo, Ohio area. After taking the Circle Tour around Lake Superior, they considered buying land in upper Michigan. A realtor directed them to northern Minnesota and they liked what they saw and bought 40 acres. Their first two summers were rustic; they had no road and built a tepee to live in. Modes of transportation included a canoe. Their first house had no electricity or running water.

Hoffman: The Hoffmans were both working 40-hour per week jobs in Duluth when they decided to move in 1980. They felt that their jobs were in direct competition with what they really wanted to do with their lives. The Hoffmans counted their savings and felt that they could build a little house in the woods and exist for three years. They came to Cook County without any prospect for jobs.

3. Most income is earned through self-employment that is both creative and diverse.

- Chapman: The whole family contributes to diverse self-employment. Tom is a successful graphic artist and his wife Pat is a published writer. The three daughters, Elizabeth, Anna and Rebekah have developed a dog business of training, mushing, boarding and grooming. The sisters also sell dog food.
- Jewett: Jane telecommutes from home and works for the Minnesota Institute of Sustainable Agriculture. She also does statistical work for a U of M professor. Jane runs the farming operations. Joe is a sustainable logger who also mills and dries his lumber. He transports the finished wood himself, completing the cycle of his value-added product.
- Spinler: Self-employed, Mark and Melinda Spinler earn income through three seasonal businesses. Their summer work is selling and repairing bicycles through Superior North Outdoor Center. In the fall and winter as Superior Sweep, they clean chimneys, install new chimneys and repair old ones. And finally, when spring comes, the Spinlers are home making maple syrup for their business, Maple Hill Sugar Bush. Mark also teaches outdoor living skills at North House Folk School in Grand Marais.

4. Families earn a portion of their income through resources on their own property or those that are locally available. This would include forest products like timber and maple syrup, farming, gardening, and seasonal recreation.

- Abazs: The Abazs family operates a community supported agriculture business (CSA). Their CSA started out by selling 16 produce shares to people. David and Lise even profited from their rocky terrain. They have taught a slip form stone building class through the North House Folk School in Grand Marais.
- Jewett: Jane runs a fully operational and sustainable farm. Her main product is beef and hogs, plus hay. Wholesale market of chicken is a serious consideration for future income. Joe logs locally. He is able to take the logs to his property for further processing. He mills the wood with a Wood Miser sawmill and uses a kiln he constructed to dry the lumber.
- Spinler: The Spinlers have a commercial sugar bush operation on their homestead. They tap maple trees on their property and on state land that borders their homestead. A commercial kitchen was built to accommodate state health regulations. The finished maple syrup is sold directly to customers and at the Cook County Farm and Craft Market. The Spinlers have expansion plans for this business.

5. Cooperation with others is more important than competition with others.

- Chapman: A deeply religious, Christian family, the Chapmans live a service-to-others

philosophy. They put Biblical principles to work and believe that the more you give, the more you get. They have traveled to Haiti to assist the people of that country. Bartering is another way that Chapmans practice cooperation. Tom says: "As opportunity presents itself and when we have a need and see somebody else has a need...everything has a value and we don't want to shortchange someone". The Chapmans have bartered for all kinds of goods and services, including vacations.

Jewett: Joe is plugging into the "Smart Wood" market and is working with land owners and forest management plans to sustainably harvest property owner's timber rather than clear cut it. Joe will not go in and clear-cut just for the money. He is also willing to take on small yet necessary jobs, such as removing hazard trees. Jane is involved with her church and public policy issues.

Spinler: Melinda is the co-founder of the Cook County Farm and Craft Market. An example of cooperative economics, the market helps local food producers to sell their goods directly to the public. She also has served as a Director of the Cook County Whole Foods Co-op. The Spinlers are members of the Sustainable Farming Association. Both Mark and Melinda are socially conscious people. They have been involved with groups such as the Cook County Children's Trust and the Family Crisis Center.

6. Financial responsibility leads people to be frugal and avoid debt whenever possible.

Chapman: The family has a pay-as-you-go philosophy. Tom tells how the Lord says, "Owe no man". Tom continues: "So we tried to do nothing that we cannot meet the obligations for it. If we have to get something through credit card...the money has to be there. And the Lord has always met our needs."

Hoffman: The Hoffmans have created a comfortable lifestyle while living on a small income from survey work. They work around not having some of the modern conveniences preferring the peace of mind of not paying incessant bills. Molly points out an example: "Look at the cost of septic systems and the related stuff that goes with them. It's a tremendous, tremendous investment for folks. And then they don't last forever. Eventually they have to get re-done." This is why the Hoffmans choose to have an outhouse.

Spinler: The Spinlers buy "used" as much as possible. And they repair and recycle. Mark took a discarded CD player at the landfill and fixed it. He now has a perfectly good player for free. The Spinlers have vehicles that are over 10 years old and running fine. The Spinler's motto: "Avoid debt like the plague". Melinda adds: "Why spend a lot of money for living nice and fancy when you could be spending that money to tour around the world!"

7. People have an ethic of stewardship for the environment and are mindful of their responsibility to it.

Abazs: Every aspect of the Abazs lifestyle and organic farm is mindful of its impact on the

environment. They try to avoid using fossil fuels as much as possible by walking or riding a bike. Dave and Lise communicate their environmental ethic by teaching at Wolf Ridge Environmental Center. They also are very active to Organic Consumers Association and the Sustainable Farming Association. The Abazs started a non-profit heirloom seed saving operation called Shalom Seed Sanctuary.

Jewett: Jane is experimenting with environmentally friendly ways to run her farm. The Jewetts received a grant from the Minnesota Department of Agriculture's sustainable farming program to demonstrate fertilizer value of local paper mill ash. They also spread their septic contents onto their fields. The farm composts animal offal using sawdust left over from the mill. Jane says: "We like to do things that aren't damaging. We try to keep our place so it's a good place for wildlife too."

Spinler: The Spinlers want to give back to the Earth for all that the Earth has given them. Their philosophy is to "live and work with the environment as if it is a family member". Their frugal lifestyle is philosophically based; they want to avoid contributing to the waste stream caused by the over consumption of goods.

8. Appropriate technologies, like renewable energy, enable rural families to live a modern lifestyle.

Abazs: The Abazs farm is off grid and powered by both wind and solar energy. Working for them is a 1500-watt Whisper wind generator and 760 watts of photovoltaic panels. Using alternative energy, David is able to operate his graywater kit business from his home office computer and web site. The water-pumping windmill is another example of appropriate technology.

Chapman: All of the family enterprises are operated out of a small high tech office with that has three computers. Two of the daughters, Elizabeth and Anna are able to take college courses through distant learning programs using the Internet.

Hoffman: The Hoffmans do not have power from the grid. Instead they have a small, solar powered renewable energy system that runs lights, various little appliances and a Sunfrost 12-volt refrigerator. Their system is unusual because Ken and Molly do not use a back-up generator. The Hoffmans take advantage of natural heating and cooling such as cross ventilation in the summer and passive solar heat in the winter. They also have a root cellar for storing vegetables and fruit. This is an example of how appropriate technology does not have to be modern or high tech.

9. Sustainable living allows people to create and maintain their own life support systems such as housing, food, water, heating and energy systems.

All families: All five of the families in this study either constructed their own house or significantly improved an existing structure. All families heat with wood, which is a renewable resource, and grow a significant portion of their own food supply. Two of the families, Hoffman and Abazs are off grid so they have built and maintain their

own renewable electric energy systems.

Abazs: They have installed a composting toilet. Their unique graywater treatment system, that David developed, waters their home greenhouse and the orchard. They also take advantage of roof water catchment. The Abazs have installed a refurbished windmill to pump well water. The well water is gravity fed into holding tanks in their house basement, from where it is pumped to household uses using electricity they produce themselves. Their farm provides plenty of wholesome food for their own use as well as others through their CSA business.

Hoffman: Ken and Molly have spectacular gardens that produce over 50% of their food. They built a hand-dug root cellar that is able to store their garden's abundance. The Hoffmans also built their house and other buildings using hand tools. An unusual feature is their solar bathhouse. Not only does the glass house serve for personal hygiene and laundry but it doubles as a seed starting and food drying area. The Hoffmans heat their bath and laundry water using a solar parabolic dish.

Spinler: Mark and Melinda organically grow about 75% of their food. If the food isn't stored in a small root cellar under the kitchen floor, they will pickle, can, or freeze it. In the winter, their house design takes advantage of passive solar heat that dramatically cuts down the amount of wood burned. Mark and Melinda do not have running water but were fortunate enough to tap into an artesian spring below their house. Mark installed his grandmother's farm kitchen pump to conveniently bring the water into the house.

10. People value their time and have the flexibility to create their own schedules. This allows them time for work, family, recreation, quiet time and volunteering to help in their community.

Abazs: David and Lise have the time and freedom to home school their children and operate their farm.

Chapman: Tom and Pat have also home schooled their three daughters. The Chapmans devote time to their home-based businesses and to their church and missionary work.

Hoffman: Ken and Molly enjoy the flexibility of their survey work. It allows them to earn some money while living a rural lifestyle. They are not stressed by keeping a clock. And if they choose, they can spend lots of time on home projects such as building a red oak floor, making a rug, or playing music. Ken says: "We made less money so we just lived cheaper. We wanted to work on our own and have more of our own time".

Jewett: Joe and Jane describe themselves as independent. Jane explains: "We wanted to be able to be raising our kids ourselves and not having daycare. We both like being in control, not having to be at a certain place at a certain time every day and answer to a boss." They also are able to carry on their families' traditions of logging and farming.

Spinler: Mark and Melinda are "hands-on" people. They enjoy the time to make and build things. Spinlers say their creative needs are fulfilled and "things have more value if you do it yourself". Being in control of their time also allows Mark and Melinda to enjoy outdoor activities and to play music with a local band. They both strongly feel that a sustainable lifestyle helps them to take more responsibility for their health. They exercise and eat better.

D. Pros and Cons for Sustainable Living

Cons

1. Cons for Self-employment

(A) Individuals are often self-employed and therefore do not have the security of a "regular job". This creates financial uncertainty, such as saving for retirement, because they do not have access to a 401K plan an employer could offer. Often self-employment produces limited income so their Social Security account may be smaller. Since they are self-employed they rarely have access to benefits that an employer would provide. If they purchase health insurance, it costs more or has lower benefits than a health plan provided by an employer.

(B) Self-employed people often find it difficult to borrow money, so they may buy a small fixer upper house or build on a pay as you go plan. This means that the house may not be finished because the time and money to complete it hasn't been found. If there is an unexpected expense, it is difficult to pay for it.

(C) Due to the financial uncertainty created by self-employment, families are frugal and avoid debt. This means they probably can't or won't borrow money for a newer car. People tend to drive older vehicles that are not covered by warranty. These vehicles often require more maintenance to keep running and if a mechanical problem develops it is often expensive to fix.

2. Cons for Living in Rural Places

(A) Families in our study live in rural or remote areas of NE Minnesota. This means they are further from emergency services like fire and health care. In fact, people in rural Minnesota pay more for fire insurance than families living in town. They may not even have house insurance because they burn wood in an unapproved stove.

(B) Living in remote locations often means that there are no utility lines to connect to, so people have to live without electricity or produce it themselves. If they produce their own electricity, they have to invest in the equipment to do this and then maintain it. Even if families have a renewable energy system chances are it will not support power-hungry electric loads like a large freezer or a washing machine. If they don't have power they must adapt to a non-electric lifestyle.

(C) If there is no electricity available, the house will not have running water. People may have a well with a hand pump or they must get water from a local spring or artesian well. Without running water families can't have conventional toilets or bathing facilities. In this case most people either use an outhouse or composting toilet. Even if they have power available, they have the cost of installing and maintaining a well and septic system.

(D) In rural areas there are fewer people spread further apart. This makes it more difficult to develop a sense of community. People who have chosen to move to rural Minnesota often are isolated from their extended family. Philosophically, sustainable living is not a mainstream lifestyle that people understand. There is often criticism from family and friends who don't understand why anyone would want to live that way.

3. Cons for a Hands-on Lifestyle

(A) Sustainable living is characterized as a hands-on, do-it-yourself lifestyle. People either chose to do things for themselves or they are forced to fix it or build it themselves due to lack of money. Either way, it requires time, skills, tools, and hard work.

(B) It requires lots of time and hard physical work to grow much of your own food, cut and split firewood, and maintain the homestead.

Pros

1. Pros for Self-employment

(A) Self-employment gives people an opportunity to work at income producing jobs that they truly take pleasure in. It is the principle of "following your bliss". Since people are working at jobs they really like, they enjoy their work more and consequently are more creative. They probably have lower stress levels than someone who is working at a job only to earn money.

(B) Individuals who are self-employed cannot rely on only one job for their source of income. People have several occupations or trades so they have a financial buffer if one source of income fails.

(C) Families who are self-employed often work at home which allows them to have more time with their children. Parents who work at home have the time to home-school their kids, if they choose. The children often contribute to the family business and learn responsibility at a younger age.

(D) Since people are self-employed they have the flexibility to create their own schedules. This allows them to spend time doing what they determine is important. They have time to work, spend time with their family, recreate, develop their spiritual life, and help their neighbors.

(E) Families who are self-employed and live sustainably tend to be financially conservative. They often live on less income than their urban counterparts. This requires them to be frugal and have a pay-as-you-go philosophy. People realize that borrowing money creates a risk to their homestead and lifestyle and avoid debt whenever possible.

(F) Because self-employed individuals tend to live on lower income, people develop strategies for getting their needs met. One of these strategies is to develop cooperative economies with other people in the community. An example of this form of cooperation would be the bartering of goods and services with others. Another would be a group of people joining together to form a food buying club that saves everyone money. These types of relationships foster cooperation instead of competition.

2. Pros for Living in Rural Places

(A) With today's technology families living in remote areas can still be connected with the rest of the world through modern information systems. This would include the telephone, Internet, and satellite television. People can attain college degrees through distance learning, research information on the World Wide Web, and sell products or share ideas with others through their web site.

(B) Rural living doesn't have many of the stress factors found in urban environments. There is a lower ambient noise level because of less industry, fewer people, and reduced air and ground traffic. The crime rate is generally lower in rural Minnesota compared with the larger cities. Also, there is less light pollution which means people can enjoy the beauty of the night sky.

(C) People who live in rural places have space for growing some of their own food. Gardening is an important aspect of the sustainable lifestyle because people have the opportunity to work outdoors, get connected with their food supply, and eat healthy fresh food. Food production can also be a source of additional income through sales of excess produce at a farmer's market or local restaurant. Some families operate small farms and sell food through a Community Supported Agriculture (CSA) operation or raise animals for sale.

(D) For the most part families who live in rural or remote areas have made a choice to live there. Where they live and how they live is more important than where they work. This makes for a deliberate lifestyle in an environment of their choosing. They are not tied to a job that dictates where they will live, they have the control to make this choice.

(E) When you live some distance from town, you tend to reuse and recycle items rather than buy new ones. People buy in bulk so they have it when it's needed and they don't have to drive to town for every little thing. Neighbors also share tools and equipment, which saves money and fosters the spirit of cooperation.

3. Pros for a Hands-on Lifestyle

(A) Families living a sustainable lifestyle characteristically are do-it-yourselfers who are self-motivated and self-taught. People are constantly learning new skills and new information because sustainable living presents the opportunities to do so. They like designing, planning, and building projects on their homesteads. So this lifestyle is, by its nature, a creative one.

(B) Individuals do much of their own maintenance and repair work because it gets done the way they want it and they save money by doing it themselves. They have the control over the work and can do it when it needs to be done. Hiring someone else to do things can lead to delays, frustration, and expense.

(C) Sustainable living requires hard physical work at times. This can be tiring but the hard work engenders both good physical health and great mental satisfaction.

(D) People have more control over their living environment because they can maintain and repair their own life support systems, such as housing, heating, energy, water, and transportation systems. They also grow a portion of their food supply and thus have some control of their food system.

(E) Families who live sustainably often cannot afford health insurance or if they have any it has a high deductible. This requires people to take responsibility for their own health. They tend to cook their own meals rather than driving to a fast food restaurant that would be some distance away from them. And you can't order a pizza because deliveries aren't made to rural addresses. Because people grow some of their own food they recognize a quality of freshness compared to what can be bought in grocery stores.

E. Steps to a Sustainable Lifestyle

Few people who are trying to live sustainably would claim to have mastered this lifestyle because there is always new things to learn and experience. The following information can be used by individuals to adjust to a more sustainable lifestyle if they desire to do so.

1. Personal Finances

- Reduce personal debt and then eliminate it. Pay off the small debts first to build confidence that you can get out of debt.
- Live within your means. Don't spend more per month than you make.
- Save a portion of each amount of money you earn, before you spend it on expenses. Pay yourself first!
- Create "loop funds" so regular income is designated for certain fixed expenses. This way you know that routine bills will be paid.
- Diversify your sources of income so you don't depend on only one way to earn money.
- Make wise investments so they produce alternate sources of income.

2. Reduce Your Expenses

- Grow some of your own food. Plant a garden. You not only save money but you get fresh air, good exercise, and fresh food.
- Buy in bulk from a local food co-op or join a buying club.
- Eat at home more often, its cheaper than dining out.
- Learn to do routine maintenance on your car or truck.
- Learn how the different life support systems of your home work so you can maintain them and even repair them. If you own your home do you know how the heating, water, waste disposal, communications, and electrical systems work? Knowing how something works will allow you to properly maintain it, thus extending its useful life and reducing the need for repairs.

3. Be Kind to the Environment and Save Money

- Reuse and recycle common household items. Wash and reuse plastic bags, save milk cartons to start plants in, and keep scrap lumber for future projects.
- Reduce your electric bill by substituting energy efficient compact fluorescent lights for incandescent bulbs. Turn off lights when not in use.
- When you buy a new appliance purchase one that is energy efficient.
- To get the most from your transportation dollar purchase used vehicles that get good gas economy and have excellent repair records.
- Walk, bike, carpool, or use mass transit if available. Bunch up your errands so you reduce your number of shopping trips.
- Be kind to the Earth's ecosystem that not only supports your live but the life of every creature

on the planet. Ask yourself how you can diminish your impact on the environment.

4. Cooperate with Others

- Understand that in competition with others someone wins and someone loses. While cooperation with others is a win win situation.
- Support cooperative economics like trading and bartering goods and services, joining a food or financial cooperative, shopping at a local farmer's market, or purchasing a share in a local community supported agriculture (CSA) operation.
- Help your neighbors by sharing tools and equipment or lending a hand when it is needed.
- Volunteer in your community or at your church, join a service organization, or become a member of a county committee.

5. Planning and Goal Setting

- Evaluate your life and examine your values. Are you working at a job you love or working only to earn a paycheck? Does your lifestyle bring you joy? Are you using your talents and abilities the way you would like to? If you could live anywhere you wanted and do whatever pleased you, where would you be and what would you be doing? Would your life make a positive difference for others?
- Outline your personal and professional goals, then create a plan to accomplish them. Once you decide who you want to be, take steps to realize this vision.
- If you want to live more sustainably, read books, research the Internet, attend workshops held at a sustainable living fair, talk with people who are trying to live sustainably and tour their homestead.
- Live intentionally. Make choices that actively support your ethics and the realization of your goals and objectives.

6. Take Responsibility for Your Own Wellbeing

- Get adequate exercise at least three times per week, spend a minimum of 10 minutes a day in the fresh air, eat a balanced diet that is preferable organic, get enough sleep each night so you are not drowsy during the day, and take a nap if you get tired.
- Take off one day a week and do whatever you want to do. Recreate, take a nap, just hang out, or enjoy your family and friends.
- Take an honest look at your habits, are they really good for you or not? Do you smoke cigarettes, drive while intoxicated, or eat fast foods too often?
- Manage your schedule rather than have your schedule manage you. If your life is so busy that you have no spare time for yourself perhaps it's time to cut back on some of your activities.
- Do you acknowledge and connect with the spiritual portion of your being? Do you take time each day for a quiet period of reflection and introspection, prayer and meditation?

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