OLD ORDER AMISH BELIEFS ABOUT ENVIRONMENTAL PROTECTION AND THE USE OF
BEST MANAGEMENT PRACTICES IN THE SUGAR CREEK WATERSHED

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Chapter 1

Introduction

1.1 Overview

The focus of this research is on the old order Amish living in the NE Holmes, SW Stark, and SW Wayne counties portion of the Sugar Creek Watershed of Ohio (SCW). Specifically, the goal of my research is to determine if environmental protection is taught formally or informally within the Amish community, if the Amish are aware of the polluted condition of the Sugar Creek and if farming best management practices (those that protect streams from pollution) are permissible within the Amish community living in the SCW.

The SCW contains numerous small cities that include Brewster, Dover, Orrville, Smithville, Strasburg and Sugar Creek. According to the 2005 Ohio EPA report the SCW (Figs. 1 and 2) is divided into three assessment units (AUs). These AUs are based on the 11-digit watershed Hydrologic Unit Code (HUC) boundaries established by the Natural Resources Conservation Service (NRCS). The same report divides the watershed land cover into 72% Agriculture/Open Urban, and 25% forest. The focus of this study is the agricultural portion of the watershed where the lower orders Amish live.
There are many different orders of Amish living in the region, and each order is distinguished by the level of separation from “main stream” or “modern” society. The higher order Amish drive automobiles (or at the very least fancier buggies), have more colorful clothing, and are permitted to participate in “main stream” activities like Cedar Point. The Old Order Amish on the other hand drive very plain buggies, live in very plain houses, wear very plain clothing and are not permitted to participate in “main stream” activities. The lower orders Amish still have primitive sanitation practices. For instance, my former neighbors who are farmers have no septic system and instead use out houses or the regular outdoors. They also have no animal manure waste treatment practices and apply untreated manure to their gardens, and their fields. The Sugar Creek (Figure 3) runs right between two of my neighbors farms. The livestock from both farms have full access to the creek and spend a great deal of time wading in it. There is little vegetation along the stream as cattle have eaten it or trampled it down resulted in increased stream bank erosion. This area also floods frequently during large rain events. I have observed that it is not unusual for rainfall to wash animal and human wastes directly into the stream. Lower order Amish are not permitted to have any modern equipment or modern methods of animal waste removal. This along with increases in dairy farm herds in the higher order Amish (Permission from Bishops to use automatic milking machines etc.) have resulted in animal waste problems in the SCW. The problems with waste management that I have personally observed while living in the NE
Holmes county portion of the watershed are also mentioned in the Ohio EPA 2005 Report for the SCW (Ohio EPA, 2005).

The SCW is just a small region, but it ultimately influences the condition of the Tuscarawas, Muskingum, Ohio, and Mississippi River watersheds. These are much larger watersheds, and in order to see improvement in the larger watersheds, there needs to be progress on a local level.

**Figure 1.** Ohio Ecoregion map with Sugarcreek Watershed Assessment Units. AU = Assessment Unit and the Sugar creek has three 11 digit AU’s which are based on the 11 digit HUC Watershed Hydrologic Unit Code boundaries established by the Natural Resources Conservation Service. The Sugar Creek is in the Erie Ontario Lake Plain and the Western Allegheny Plateau Ohio Ecoregions. (Ohio EPA, 2005)
Figure 2. A complete map of the Sugar Creek Watershed. Outlined study area represented in figure 10 (Ohio EPA 2005)
This local progress can be strongly aided by enlisting the help of locally respected conservation groups (Freeman and Ray, 2001). Efforts need to be coordinated with state and national agencies because the SCW faces some of the same issues as other watersheds face. However, I argue that the Sugar Creek region also has some unique problems mainly because there exists a different culture that needs to be educated. Dosskey (2002) suggested that in such situations, solutions need to be specific to the watershed in question.

There have been efforts by several local agencies to educate all of those that live in the SCW, but very little has been done to determine the involvement of the Old Order Amish. A National Science Foundation grant allowed for the education of children in the
natural sciences. This grant builds on the work of the SCW Project which is working with Wayne and Holmes County agricultural communities to improve water quality. The goal of this funding is to expand environmental teaching into Amish Schools and influence future Amish leaders (Espinoza, 2007)

In light of the unique problems in the SCW, the specific objectives of this study are to:

1. Determine whether Amish are aware of the polluted condition of the SCW, and the hazards associated with this condition:
2. Determine if taking care of the environment (i.e. preventing pollution of the SCW etc.) is a part of Amish religious beliefs; and
3. Determine if Amish are permitted to use non-modern conservation practices such as contour plowing, livestock fencing strip farming and vegetation strips to help minimize the impact of farming on the SCW.

To accomplish this, I interviewed Amish Bishops, Deacons, Preachers and church members from several different churches in Wayne, Holmes, and Stark Counties Ohio. Bishops are ultimately the ones that make the final decision on the various practices within the church, but they will rely on the input of the Preachers and Deacons when considering a particular matter. Typically each church will have one Bishop, two Preachers and one Deacon. A few of the Bishops represented two churches and all of
the known lower order Amish churches are represented in the interviews. The church members that I interviewed were individuals that I knew personally.

1.2 Personal Observations and Knowledge of Amish Culture, and my Position in this Research

Since I lived in Holmes County Ohio I was able to observe and interact with my Amish neighbors and specifically with my son-in-law (ex-Old Order Amish). I observed the lifestyle of my Amish neighbors that lived along the Sugar Creek in Holmes County Ohio and spent a great deal of time speaking with them about their simple way of life. I interacted with adults, teens and children from the various orders represented in the area I lived.

The world’s largest Amish community is located in Holmes, Stark, Tuscarawas and Wayne Counties in Northeast Ohio. There are many different orders of Amish that range from the New Order to the Old Order and from the Beachy Amish which often drive automobiles to the primitive Amish that drive buggies with candle lanterns for lights. All of the Amish have a strong sense of community and are known for extended families living on the same property. Some of the higher orders of Amish allow their children to attend public school while the Old Order typically educate their own children and only to the eighth grade in small school houses (Figure 4). Generally speaking the Amish believe that in order to go to heaven you have to obey the commandments of the Bible (Martin Luther German Version of the Christian Bible), and this includes the beliefs that modern inventions are wrong and living separated from the modern world system
is required. All orders of Amish typically follow the rules set forth by the Amish leadership for a particular church, and these rules are typically based on the leadership’s interpretation of the Bible.

The level of separation from the world varies significantly in each of the orders. The very primitive Amish typically grow or slaughter what they eat, and make all of their own clothing. The primitive orders will typically only shop at stores in their community (bulk food stores etc.) and only travel in a vehicle when absolutely necessary. It is common to see the higher orders at stores like Wal-mart and often times they will travel for recreational purposes. Many of the higher order Amish homes are fairly fancy and expensive and have gas heat and indoor plumbing. The lower order homes, however, are very simple and plain with no indoor plumbing and use only wood burning fireplaces for heat. It is common to see new Amish churches initiated if the members perceive their current church as becoming too modern. The new orders usually derive their names from the men who split off to start the new churches.

There are three religious practices that are somewhat unique to the Amish culture. The first is “sowing your wild oats” which is a common event for many though not undertaken by all. This is a time period when the Amish young people will experiment with, or participate in, mainstream society. They will get drivers licenses, go into town and drink, or move away from home and work and live like the average American young adult. Some of those that sow their wild oats never return to the Amish way of life, but a good number return, join church, get married and carry on the
tradition of their parents. A second practice, bundling, is a courting practice that usually involves a boy and a girl sleeping together without having any physical union.

Figure 4. Old Order Amish School in Southwest Stark County Ohio. (Photo by David Widner)

The boys typically go to the girl’s house looking for a girl they will eventually marry. They typically do this with families in the same church. In extreme cases girls have been sewn under a blanket so that no physical contact can be made. It is common on Friday and Saturday nights to see teenage boys and girls 15 and a half years old and older in groups at night, in a more public display of courtship.
I spent many years living with and interacting with various orders of Amish. I was the pastor of a church in SW Stark County Ohio and many of the Amish young people visited my church while sowing their wild oats. I spent a great deal of time speaking with these young people about their culture and learned a great deal about their way of life. I also spent a great deal of time with parents and Amish leadership who came to me to discuss the return of their children to the Amish way of life. I learned a great deal about their basic approach to life and what motivates them to do the things that they do.

Most of the Amish I knew were farmers or came from families that were farmers. I worked with an Amish construction crew when I first moved to the area and found that they had high ethical standards and quality workmanship. They are very conscientious about cleaning up their messes at the end of the day and very efficient in their work. Most of them followed the rules of the Bishop’s to the letter, but I had the occasion of going water skiing behind an Amish owned boat. While motorized vehicles were prohibited for this type of Amish, in this case the boat was hidden from the scrutiny of the leadership of the church. I make this point because generally speaking the Amish follow their leaders; however the convictions of individual Amish often lead them to creative ways of utilizing modern equipment while they maintain “publically” their position in the church.

Because I lived in Northeast Holmes County Ohio and my neighbors were the type of Amish I am interviewing in this study, I had the opportunity to observe close-up their farming practices and daily way of life. The Sugar Creek flowed through several of
my Amish neighbor’s farms and flooded its banks numerous times during the time that I lived there. Most of the area farmed by my Amish neighbors was on the Sugar Creek flood plain. The vegetation along the creek was largely missing due to heavy grazing of cattle from the Amish farms and the cattle were in the creek on a daily basis (Figures 5 and 6). The Amish children and non-Amish children from nearby homes frequently swam in the Sugar Creek while the cattle were wading nearby. I also noticed that there were large areas that had been severely eroded by the cattle as they entered the creek and these areas became even more eroded when we had heavy rains. Cattle manure covered the land surrounding the creek and these fields were under water frequently.

I also had the opportunity to observe the general sanitation practices of my Amish neighbors. They used outhouses and had no running water inside their homes. My neighbors sold milk in milk cans to local cheese dairies and they transported their milk using manure wagons. I could see from their daily habits that there seemed to be no concern about contamination and personal hygiene was very limited.

My Amish neighbors have very large families and as the children grow older and get married many of them build homes on their parent’s property. All of my Amish neighbors were consistent in following the mandates of their church. My one Amish neighbor wanted me to take his wife to the clinic for a check-up. He was not permitted to ask for a ride but if I offered him a ride he could ride in my vehicle. There are often mandates that differ for men and women. My Amish neighbor would hand me a note with a phone number and I would dial the number and hand the phone to him. His wife
would hand me a note with a phone number and an explanation of what was needed and I would dial the phone and talk to the person for her.

Figure 5. Absence of vegetation in a tributary to the Sugar Creek due to cattle grazing. (Photo by David Widner)

I would often get stuck in front of my Amish neighbor’s house because they were not permitted to use gravel and the lane was very muddy when it rained. They were very protective of their children also. Four of my neighbor’s children came into our house to
get some candy and my neighbor asked me kindly not to let them in my home. They do not want their children exposed to and tempted by the modern devices in our home.

My personal experience with the Amish over the last twenty years has given me insight into their complex culture. My son in law has also provided me with a great deal of understanding about the Amish Culture. He was raised in an Amish home exactly like the neighbors I had in Holmes county (Figures 7, 8 and 9).

Through this study I did not attempt to find fault or to place blame on a particular population for the non-attainment status of the Sugar Creek Watershed. I have traveled extensively within the research area and have seen firsthand the farming practices outlined in the Ohio EPA report that impacts Sugar Creek. There are many
areas where trees have been removed along Sugar Creek and its tributaries, and erosion is evident throughout the region. There are non-Amish farms in the study area as well and they have removed trees and have erosion issues also. The main difference is how the Amish rely on watering cattle in the Sugar Creek and its tributaries and how they have no manure management practices.

Figure 7. Old Order Amish Farm. (Photo by David Widner)
Figure 8. Old Order Amish Home. (Photo by David Widner)

Figure 9. Old Order Amish in Buggy. (Photo by David Widner)
Chapter 2

Literature Review

2.1 Introduction

This literature review is divided into sections to provide an understanding of the Old Order Amish culture and their farming practices. This especially helped me to focus on the positive things that the Amish are currently doing which was useful as I addressed some of the watershed issues in my interviews. In addition, I discuss best management practices literature since this provides the detailed information about solutions that could improve the conditions of the SCW. This especially includes environmental education dealing with the urgency of protecting the environment. I also reviewed cultural geography literature to help me gain an understanding of how geography attempts to answer cultural related questions. I then looked at literature that dealt with the interview process that helped me to design questions to ask in the interview, and helped me to conduct the interview. Finally I looked at literature that helped me understand and interpret my interviews qualitatively. The two Ohio EPA reports are important because they represent the documented facts about the current condition of the SCW, and the reasons for non-attainment of Ohio EPA standards.
2.2 Understanding Amish Culture

The Amish religion, started by Jacob Ammon, originated in Europe during the seventeenth century, and was influenced by the teachings of Menno Simons (a Dutch reformist and former Catholic priest who was born in 1496 and died in 1561). Simons believed that the religious sacraments of the Catholic Church had replaced the blood atonement of Jesus Christ (Grislis, 1992). The Amish are considered to be German Swiss in origin and came out of the Anabaptist movement. They started migrating to the United States prior to the American Revolution and, as a group; they have primarily remained an agricultural society. They are broken up into small communities of families, and are led by Bishops, Deacons and Preachers. The largest Amish population in the world is found in Holmes County Ohio. This population consists of many different types of Amish with various beliefs concerning separation from the world (O’Neil, 1997).

A fundamental and foundational belief of the Old Order Amish (referred to as Amish in the remainder of this review) is to be separated from the world (Cates and Graham, 2002). This separation involves physical separation from the modern world around them, and ultimately is the motivation behind their approach to life. The Amish believe that in order to go to heaven they must avoid the use of modern inventions, and obey the rules of their church. Modern inventions include such things like electricity, telephones, and automobiles. Rules involve every aspect of life and are very specific. The Amish way of life is also very simplistic and uncomplicated (Cates and Graham, 2002). They do not get caught up in the trends and fast paced life of modern society,
and are content to spend time with their extended families working the farm and playing simple games. They typically get up early, work hard throughout the day and go to bed early. Every other weekend they have church which is an all day family affair with eating and various games. This simplistic approach to life and the separation from the world is what has characterized the Amish culture for many generations.

Decision-making in Amish culture is based on what is considered practical or necessary for daily living (Blake and Cardamone, 1997). Amish generally do not engage in what they consider to be frivolous activities, and are considered wise stewards of time. Along with their practical approach to life is the attempt to minimize reliance on outside help from the modern world. The Amish are well known for their community efforts in rebuilding barns (barn raisings) and homes, and helping each other during harvest time. The Amish will utilize hospitals and modern transportation, but this is typically a last resort and very minimal.

The Amish are extremely orthodox in their beliefs, following the traditions of generations of Amish before them. These orthodox beliefs break down into rules that are very specific, and apply to every part of their lives. These foundational beliefs remain unchanged from generation to generation, however the specific rules may be amended somewhat from church to church, and generation to generation. For example, one Amish church may permit gravel in a driveway if the gravel comes from a creek that runs through the property, while a second Amish church is not allowed to use gravel at all. The foundational beliefs remain intact with various modifications to the
specific rules. These rules then must be followed to the letter by every member of that particular Amish church (Kollmorgen, 1943).

Another important aspect of Amish culture is its approach to education. Amish believe that higher education is a form of pride and therefore unnecessary (Cates and Graham, 2002). They believe that education through the eighth grade is all that is necessary, and attendance is scheduled around farming needs. I have learned from personal experience with the Holmes county Amish that this level of education will provide Amish children with the necessary foundation to function in Amish society, and by completing their education at this level they are protected from peer pressures that would encourage them to leave the Amish. Education is provided by individuals chosen by the church, and children are taught the basics of English, reading, writing, math, science and history. Their education is religious, and the same values learned at home are reinforced by the school (Kollmorgen, 1943).

The Amish also have their own spoken language. This language is a “lower” German and is spoken in the home and within the church community (Kollmorgen, 1943). The children learn English when they go to school, but they are to speak German within their culture to further encourage separation from the modern “English” world. The Amish also use a German Bible in their church services, but because this is a “true” German written language they often have difficulty understanding what the Bishop is reading to them.
The Amish are also known as nonconformists in their dealings with the outside world. They will not send their men to fight in American wars, and they elect not to pay social security tax. They also will not sue someone when wronged, and will not get local authorities involved unless it cannot be avoided. The Amish are not interested in getting outside help for the various problems they face unless it is absolutely necessary. This does not mean that they openly or purposely disobey the laws of the land. They are similar to other traditional societies in that their authority lies in religious norms or “taboos” that carry more weight than politically derived rules and regulations (Colding and Folke, 2001). They are conformists when it comes to their dealings within the church. If an incident happens between church members or within a family they will conform to the mandate of the Bishops. The members will also follow the rules set forth with uniformity, which makes them fairly distinguishable from churches of similar belief systems (Kollmorgen, 1943).

The Amish leadership consists of Bishops, Deacons and Preachers. These leaders are selected by a process known as “drawing lots”. These Amish leaders are responsible for maintaining the current belief structure of their church, deciding on modifications or additions to the current list of rules, and enforcing the rules. They use church discipline to encourage adherence to church doctrine, and will investigate alleged violations. Any outsider that becomes involved (i.e. medical professional) will typically need permission from the Bishops to prescribe certain treatments. As mentioned earlier incidents that may have typically involved social services or related agencies when occurring in
“English” society will usually be handled internally by the Bishops unless it requires a criminal investigation (Cates and Graham, 2002).

2.2.1 Cross Cultural Difficulties

It is important to understand the culture of all individuals involved in any project. This is especially true of traditional societies that rely on taboos and social norms to govern their everyday lives (Colding and Folke, 2001). A lack of understanding can create difficulties when trying to accomplish a certain goal. Trying to impose a practice on a traditional society like the Amish that violates their fundamental beliefs will result in failure of an attempted cure, or solution (Cates and Graham, 2002).

Understanding culture involves the realization that there are often two completely different world views. Mainstream society may be interested in a one world government in which the economy and the environment are of high priority, however traditional societies like the Amish may be more concerned about perpetuating their sheltered community with little concern about what is happening in the rest of the world. These close knit societies tend to be resistant to outside influence and are very unlikely to change their views unless it occurs from within (Cates and Graham, 2002). This may mean that if we are attempting to accomplish a particular goal (i.e. ecological), it will be important that the traditional society sees the goal in light of their own taboos and norms, and incorporates that goal into their belief system (Colding and Folke, 2001).
2.2.2 Amish Farming Practices

The Amish are known for primarily being an agricultural society. They have two basic approaches to their agricultural practices. The first is that they look at themselves as stewards of the land they live on. This means that they believe that the land belongs to God, and they have been entrusted with taking care of it. They believe if they take good care of the land they will be blessed and have a good harvest. Sustainable agriculture is their second approach. The Amish want to be able to use the land over and over without depleting the nutrients in the soil, and pass the land to the next generation so they can use it as well (Blake and Cardamone, 1997).

The Amish also use a non-mechanized approach to agriculture. They use horses to pull their farm equipment and do much of their cultivating by hand. Typically their farms are smaller and they grow enough crops to maintain their own livestock. Some of the Amish will have “produce” gardens and will generate a little cash for items they cannot produce themselves. They will also use dairy cattle to generate income. The milk produced by their cattle is typically sold to a dairy for cheese production. They typically use manure as their source of fertilizer, and generally do not use pesticides or herbicides (Blake and Cardamone, 1997).

2.2.3 Amish Farming, Sanitation and the Environment

Although the Amish are generally good stewards of the land, there are still some impacts from primitive sanitation practices and a lack of cattle and other livestock
management practices. These practices are not a result of gross neglect on the part of the Amish. The Amish are similar to other traditional societies in that they base their sanitation practices on religious and cultural norms (Avvannavar and Mani, 2007).

The Amish do not have any indoor facilities with running water. They use outhouses or simply relieve themselves in the open throughout the farm. These primitive type sanitation practices carry over into their livestock. Horse and cow manure is generally spread throughout the farm with high concentrations in the barn yards and milk houses. This presents a problem when it rains because of uncontrolled runoff in these areas that ends up in the streams that run through the farms. An additional sanitation issue involves the direct access of cattle to streams. Cattle are not fenced out of the streams and will defecate and urinate directly into the stream (Ohio EPA, 2005). It is common to see Amish children in the streams with the cattle.

2.3 Old Order Amish Impact on the SCW

The SCW (Figures 1 and 2) has been listed by the Ohio EPA as the second most impaired watershed in the state of Ohio. According to a recent Ohio EPA report (2005), the primary reasons for non-attainment of recreational use standards in the watershed are the direct access of livestock to the streams, and the lack of manure management. The major areas of non-attainment are the portions of the streams that flow through the Amish farms (Figure 10).
There are several problems that are associated with the lack of manure management, and direct access of livestock in the streams. The first of these is increased flooding. This is the result of the removal of vegetation along the streams, which speeds up the entrance of water from the fields during rains. This leads to a second problem which is an increase in sediment loading in the streams as a result of the erosion that occurs during heavy rainfall. A third problem is an increase in the levels of *E.coli* and other fecal coliforms, which is an indication of potential pathogens in the stream (Ohio EPA, 2007). This is the non-attainment problem cited in the 2005 Ohio EPA report. Dairy farms are known for having the potential for Shiga toxin-producing *E.coli*, which is a known human pathogen (Franz et.al. 2007). The potential for contact with these fecal coliforms are greatly increased when streams become loaded with sediment because the coliforms attach to the sediment and are transported in suspension in the stream channel. Increased flooding also impacts stream quality because the areas with concentrated manure end up under water.
Figure 10. Enlarged study area from figure 2 (Ohio EPA 2005) with corresponding image (Source: Google Earth) there is a large concentration of Old Order Amish living in the vicinity of Wilmot and Mt. Eaton. Inset is enlarged in figure 11.

Figure 11. Enlarged inset from figure 10 which shows two Old Order Amish farms along the Sugar creek. (Source: Google Earth)
2.4 Potential Amish Best Management Practices

Previous literature cited mentioned the importance of understanding Amish culture when working on cross cultural projects. There is extensive literature that deals with agricultural best management practices, but much of this would not be appropriate for the Amish. The three areas of best management practice mentioned in the literature that would be appropriate for this research address the non-attainment issues that are outlined by the Ohio EPA. The first type of best management plan that will help restore the quality of the SCW involves the restoration of riparian vegetation. According to Hook (2003) this is the maintenance of trees, shrubs, and grasses along stream banks. This vegetation helps reduce erosion of the stream banks, helps reduce flooding, and helps reduce agricultural runoff that enters the stream. A second study (Napier, 2000) refers to additional vegetation buffers that complement the vegetation that is on the stream bank. These grassy buffers can further reduce the impact of agriculture on the watershed. A third (Rhodes et al. 2002), involves putting fencing up along the streams. This serves the dual purpose of keeping the livestock out of the stream, and keeps the livestock from destroying the vegetation growing along the stream.

2.4.1 Benefits of Implementing Best Management Practices

Again there is much in the literature concerning the benefits of using best management practices, but the focus here is what is pertinent to the issues in the SCW. One study (McKergow et al. 2003) refers to the reduction of sediment loading in
streams. While this study mentions several reasons why this is important, the most critical one for the SCW is that it reduces the chance of fecal coliforms being suspended in the stream. Another important benefit related to the reduction of sediment loads is the reduction of soil loss (Lovell and Sullivan, 2005). The same study also points out that the use of best management practices improves the environmental, ecological, and recreational use of the stream. This is the goal of the Ohio EPA (2005 and 2007 reports), and simple practices like fencing mentioned previously will greatly enhance the quality of the watershed.

2.4.2 Effect of Education on Farming Practices

Numerous studies have been conducted that address the education of farmers about environmental issues. These have involved the use of surveys to determine if there is potential for environmental action. These studies have successfully shown that beliefs concerning environmental issues can be determined through the use of surveys (Fielding et al., 2005). Studies have also been done that address the cross cultural issues of the Old Order Amish and these have demonstrated moderate success in cross cultural interactions (Cates and Graham, 2002). A study was conducted in New Zealand (Rhodes et al. 2002) to determine if educating farmers about environmental issues would lead to the use of best management practices. This study points out that positive attitudes and beliefs about environmental issues can influence action, but ultimately the purpose of educating farmers is to foster a change in behavior or practice. This study found several
different responses to being educated about environmental issues. The first were those farmers who had no change in attitude about environmental issues, and would not implement the best management practices. This group would not implement practices even if funding was available. A second group of farmers could see the need for implementing the best management practices, but did not have the resources to accomplish them. A large percentage of this second group said that they would implement the best management practices if subsidies were available. A third group of farmers that had the resources to implement the practices did so after they had been informed about the environmental issues. The second two groups have the greatest potential to have a positive impact on the environment.

2.4.3 Motivations for Farmers to Implement Best Management Practices

There are several studies that looked at various motivations for implementing best management practices. Fielding et al. (2005), describes the tendency of farmers to look at the overall cost and benefits of implementing a particular practice. Owen and Videras (2007) focus on religion as a motivation for contributions to society, and in particular talks about how religion affects attitudes toward environmental issues. This study divides religious people into several different classes. The classes range from people that are very devoted to their religion to those that are marginal in their practices and beliefs. The study also makes a distinction between different types of religion. Hindus and Buddhists have a built in system for environmental concern. These
two religions have a connection to a spiritual environment. Some aspects of Christianity look at the need to be responsible stewards of the land because they believe God has entrusted the land to them. The study also describes the difficulty in determining whether environmental concern is a personal conviction, or is it a directive of a denomination. This study is especially important because the religious culture of the Amish is what guides their approach to everything they do. A third motivation for implementing best management practices is government regulation. (Ohio EPA. 2005; Ohio EPA. 2007) Currently the Amish non-point source pollution described in this review is not regulated like the point source pollution affecting the SCW.

2.4.4 Environmental Perception and the Implementation of Best Management Practices

The literature review included studies on the relationship between environmental perception and the implementation of Best Management Practices. These studies indicated that the likelihood of environmental action was greatest when people perceived that there was a need (Anderson et al, 2007). When there is no perception of an environmental threat, there was no active involvement in conservation practices. When water is perceived as being polluted and potentially creating health risks to individuals, we will see a community of people that are concerned and seeking ways to make the water safe to use.

A second article deals with the matter of understanding terms like natural environment and how conceptual differences impact perception. The article also
focuses on how differences in life experiences impact how people perceive environmental concerns (Broderick, 2007). People interact with the environment in unique ways and at different levels of intimacy, and these differences in interaction can be governed by religion or tradition. According to this same article perceptions can be shared in a community that has strong cultural influence, but each individual is still going to have a unique experience with their environment that can produce unique perceptions. This unique experience can also be the result of differences in space and the environmental issues associated with that space. This article also states that having an understanding of the role of environmental perception is critical to environmental management strategies.

2.5 Cultural Geography and the Amish

This research attempts to determine the effect that culture has on the environment. There have been numerous attempts to separate religion and government, and religion and society, but historically it has been seen that the practices of local and international societies are greatly impacted by the religious outlook of its members. (Kong, 2001) The world today is confronted with many environmental issues and the approach to these issues is highly dependent on the cultural make-up of each society. Environmental issues on a local level are impacted by individual cultures and this study also attempts to see if a culture that is not typically concerned with these
issues is at least aware of the problem and can potentially do something to contribute to the solution.

Livingston et al. (1998), Deals with religious culture in the context of space. Religious groups typically have a preference for the space that they inhabit, with some groups willing to integrate with others of different views, and other religious groups segregating themselves. Also within the concepts of space there are those that will allow their children to obtain their education in schools with a variety of religious views, while other religious groups only allow children to be educated by their own leaders. Religious education has a major impact on the views of a particular group, the continued reproduction of those views, and whether a group will migrate away from those views.

Another study, by Brace et al. (2006) addresses the role of sacred space not only within the context of the church or chapel, but also in the everyday practices and structure of a particular religious group. Methodism is given as an example of a religious society who engaged in sacred activity in and out of church.

Cultural geography often deals with conflicting moral issues in society. Often two groups with completely different moral standards have difficulty compromising when dealing with societal issues. A study by Setten, (2004) deals with the moral landscape of productive farming practices and the consequent environmental issues associated with modern technology. This paper brings out the fact that there is often ambiguity in regards to what an environmental concern is and focuses on the importance of clarifying
terms. This study also takes a look at how history impacts the moral standards of individual cultures.

2.6 The Interview Process

Developing the right kinds of questions is important to the interview process. The questions need to be clearly understood and non-offensive to those being interviewed. The use of primary questions to open up a topic and secondary questions to gain additional information are also important to the interview process. Prompting is also a good tool to use when a question is not clearly understood. There are many types of interviews that range from a fairly rigid structured type interview to a very flexible unstructured interview. The semi-structured interview lies somewhere in the middle of this range can employ the use of predetermined questions, but also allows for the flexibility of asking additional questions that arise as a result of the dialog (Hay, 2005). Each of the interviews should begin with general polite conversation in order to create a more pleasant atmosphere, and the reason and nature of the interview should be clearly discussed. This includes an introduction of who the interviewer is and where they are from and the reason they are conducting the interview (Robinson, 1998). Good listening skills and recording of dialog is also essential to the successful interview.
2.6.1 Qualitative Methods

Qualitative methods attempt to look at the complex nature of human geography without the use of statistics. Many aspects of human geography include behaviors and motivations for those behaviors that are very difficult to analyze accurately through the use of statistical methods. Qualitative analysis takes a deeper look at human behavior instead of making generalizations or looking for specific trends. Robinson, (1998) discusses how qualitative research attempts to view the world through the eyes of those we are studying. He mentions several important essentials for using qualitative research. He says that qualitative research is essential if you are doing field research and more concerned about meaning than behavior. He also stresses the importance of creating categories and organization of information in a theoretical framework. The interview process is one method used within qualitative research to acquire information that can be analyzed in regards to meaning within a certain social or religious context.

2.6.2 Interview interpretation

One approach to interview interpretation is the use of a narrative. A narrative tells a story and helps us to understand a culture and the motives behind that culture’s behavior (Wiles et al. 2004). The narrative not only tells a story but also explains how that story is to be understood. The narrative attempts to prevent a reader from wondering why this project was undertaken. One aspect of the narrative takes into
account the contextual basis of the narrative. An example is given in which an interview can be affected by the use of a recording device.

Two different types of analyses can be used in the interpretation of an interview. A manifest content analysis simply looks at the surface content of an interview. This type of analysis would look at how many times a particular question was answered the same by the participants. A second analysis is called a latent content analysis which looks for a theme that is interwoven throughout each of the interviews. This type of analysis looks for meanings behind what was said (Hay, 2005).

Another thing to consider when analyzing interviews is the accuracy at which the interpretation is portraying the actual views and motives of those being interviewed. As an outsider, are we giving our readers the true interpretation of the responses to the interview, or are we adding our own personal biases and views and constructing a discourse that misrepresents the participant’s actual feelings and outlook (Robinson, 1998).
Chapter 3

Methodology

3.1 Introduction

In this chapter I will be discussing the main methods used in my research. I will discuss the locating of Amish for the interviews, the interview process, and the categorization of the interview questions.

3.2 Locating the Amish for Interviewing

I mapped the location of Amish farms (Figure 12) within the targeted area of the SCW in which I conducted my surveys. There is a large concentration of Old Order Amish in SW Stark County, SE Wayne County, and NE Holmes County. I approximated the location of individual Amish farms through the use of aerial photographs and satellite images, current maps, and field work with topographic maps and GPS. My next step was to determine the number of Old Order Amish churches represented in my area of study. I relied on my son in law who had been raised in an Old Order Amish home to provide me with an approximation of the number of Old Order Amish churches in the Sugar Creek Watershed region of Ohio. I wanted to insure that I was interviewing at least one person from each church found in the region. My son in law was also able to provide the
name of at least one Deacon, Preacher or Bishop from each of the churches that were currently in the area.

Typically each farm (that my son in law referred me to) that I went to had multiple residences on it. I went to one of the homes on the farm and introduced myself and told them I was interested in speaking to an Amish Deacon, Preacher or Bishop. I then asked if they knew where one of these lived. They would either tell me that they were one of these leaders or would refer me to someone else that lived on the property. If that person was not home I would ask if they knew of any other Amish leadership in the area and determine where they lived. I would then drive to that farm and begin the process once again.

I would begin each interview with an explanation of whom I was and why I was there. I told them that I was a Kent State Graduate student and that I was interested in determining the environmental awareness of the Amish. I would comment on how I appreciated the fact that the Amish appear to be good stewards of the land and that I wanted to get their views on how they approach the environment within their culture. I then explained to them that the reason I was speaking with the leadership only was because I respected their faith and did not want to create the impression that I was interfering with the Amish way of life. I would then ask for permission to ask them a few questions about their farming practices and environmental views. I had originally planned on using a recording device which would have made my work a great deal easier. I anticipated that I might have difficulty interviewing the Amish even without a
recording device. I was concerned that since Amish do not like having their pictures taken, and do not believe in modern inventions, that I might offend them by asking their permission to use a recording device. I simply wrote down the answers to each of the questions on a tablet as I was interviewing them. Once I completed an interview I would go back to my vehicle and drive to a spot where I could review the answers that were given to each of the questions. I also spent time making sure that all of the answers I had written down were legible, and that I had written down everything that the participant had told me.

3.3 Interviews

The primary method used in my research was through interviews of individuals from the Old Order Amish Community. I decided that in order to demonstrate respect for the culture of the Amish that I would only speak to the leadership of each church and to a few individuals that I know personally. The human data I collected attempted to answer my research question about whether or not the religious beliefs of the Amish impact the environment in which they live. I designed a questionnaire that helped me determine the Amish perception of general environmental issues, and issues involving the SCW. Additional questions were developed to determine if the Amish are taught to take care of the environment. Questions were also designed to determine if non modern conservation practices are compatible with Amish beliefs. (Rhodes et al. 2002).
Figure 12. Locations of interviews conducted (Yellow Arrows).
Questions were included that ask if certain practices are used, or if certain practices could be used. I included questions that indicated the level of awareness that the Amish have about general environmental issues, and about the pollution and associated hazards within the SCW.

I researched sample interviews from the literature and consulted with my advising team about the actual construction of the interview as well as the proper etiquette for conducting a survey. I incorporated the condition of the SCW into the survey and designed the interview with the purpose of determining the following: Amish awareness of the polluted condition of the SCW and the hazards associated with that condition, whether Amish are taught to take care of the environment, and if Amish are permitted to utilize conservation farming practices.

### 3.4 Interviews and responses

In order to gain a better understanding from my questionnaires, I sorted the questions and their respective answers into three main categories. These are:

- **Category 1** – designed to determine a general environmental awareness;
- **Category 2** – designed to assess knowledge of Sugar Creek and its watershed; and
- **Category 3** – designed to assess Amish farming practices.
3.4.1 Category 1 - Environmental awareness

It is important for this study to understand the degree of Amish awareness of environmental issues in general. Specific issues can change from region to region, and in the case of the Amish who may migrate to from one region to another, it is important to determine if they understand general environmental issues other than just those that affect them directly at the site of their homes and farms. My hope, in designing questions in this category, was to give myself a clear understanding of how the Amish view the environment and if they feel any responsibility in the maintenance of it. There are four questions in this category (1-4). It should be noted that these questions required the greatest amount of prompting in order to get clear answers.

Question 1 “Are environmental topics taught in your schools and if so what are they?” was designed to determine if the Old Order Amish system of formal education included any teaching about the interaction between man and the environment. This is a key question because formal education insures that all of the families represented will hear or not hear about the pertinent topic.

Question 2 “Do your children learn anything at home about the environment?” is important because answers should demonstrate the individuality of a particular family, or conversely will show that within the Amish culture all families teach their children the same. Combined, questions 1 and 2 will show whether the Amish segregate
what they teach, or if what is taught in the home is consistent with what is taught in school.

Question 3 “What are your views about man’s responsibility to the environment?” is designed to show either a consistent view within the culture or an individual view separate from culture. If concern for the environment is demonstrated through this question, it will open up the door for the use of best management practices that may not be used, that could reduce the impact of farming practices on the watershed.

Question 4 “Have you or your church members been confronted with any environmental issues and if so what are they?” was designed to determine the overall awareness that the Amish have about the environment as a group and if they have been affected by it in any way.

3.4.2 Category 2- Assessing knowledge of Sugar Creek and its Watershed

This category included six questions (questions 5-10) that dealt specifically with the Sugar Creek and its tributaries that drain the Amish farms in this region of the watershed. This group of questions was designed to determine the level of understanding that Amish have about stream quality in their immediate region, and to determine the overall awareness of the polluted condition of the watershed. The main concerns here are bacteria and sediment, which provides substrate for the bacteria, in
the stream channel. As stated earlier, these are high in the SCW as they have been tied directly to bank erosion and fecal matter entering the streams. These are both directly related to Amish farming practices (OhioEPA, 2007).

Question 5 “Do you have any concerns about your land and water?” builds upon question 4 by focusing specifically on the concerns of the Sugar Creek watershed. By asking about “your land and water”, by default the answers will be about Sugar Creek. The answers to this question will help me assess if there is potential to implement best management practices to solve these concerns.

Since the Sugar Creek Watershed is the second most impaired watershed in the state of Ohio, question 6, “What do you know about the streams that flow through your land?” Specifically attempts to determine if the Amish know that the streams on their farms are impaired. It is important to determine how important the streams are to the Amish, and how dependent they are on them.

Question 7 “In what ways do you and the members of your church use the streams that flow through your land?” will help me assess this dependence. Similarly, question 8 “Are there any recreational activities that involve the streams flowing through your land?” will help to determine the level of interaction between the Amish and the Sugar Creek. In extension, question 9 “Have you or your church members had any problems when using these streams for recreational or work related purposes?” attempts to verify whether the unsafe condition of the stream has any affect on the
Amish as they interact with it. Finally, question 10 “What is your opinion about the overall water quality of the streams flowing through your land?” attempts to see how the perception that the Amish have of the stream lines up with the actual condition of the stream.

3.4.3 Category 3: Assessing Amish Farming Practices

The final category of questions (questions 11-15) involves the current farming practices of the Amish and the potential for using farming best management practices that could improve the water quality of the Sugar Creek Watershed. The two Ohio EPA reports (Ohio EPA, 2005 and 2007) had mentioned that the primitive farming practices of the Amish are part of the problem that led to the watershed being in non-attainment status for recreational use. These questions attempt to verify the findings of the report, attempts to determine if the Amish are doing anything to reduce the impact that farming has on the watershed, or what their opinion is about the use of best management practices.

The questioning started simply with question 11 “What kinds of farming practices do you and your church members use?” This was an important question because it was designed to provide insight about the approach that Amish take to farm their land, and whether or not this approach is impacting the watershed. The remaining questions specifically address known practices that have environmental impact.

Question 12 “What kinds of farm management practices do you use to prevent the loss
of soil due to erosion?” attempts to determine if the Amish are doing anything to prevent erosion. This is important because bacteria need substrate and this is supplied by sediment in the stream that derives from soil erosion, and to see if reducing soil loss would be a motivation to implement farm management practices. Question 13 “How do you manage your manure?” will help me assess how and when the Amish spread their manure and how they store and treat the manure. Manure is a documented major contributor to the bacterial problems in the watershed.

Question 14 “What is your opinion about the use of farm management practices to protect the land and water on your farms?” was designed to determine if there was potential for the implementation of farming best management practices that would reduce the negative impact that agriculture has on the watershed. Farm best management practices are important to implement because they greatly reduce the negative impacts of agriculture on surface water. The farm best management practices that would apply in this situation would be non-modern or natural in nature in order to conform to Amish religious beliefs.

Finally, question 15 “What is your opinion about the use of fencing to limit access of livestock to streams on your farms?” was designed to determine the likelihood of utilizing this best management practice. A second cause of non-attainment for recreational use in the watershed is that cattle from Amish farms have access to streams. The problem with this is two-fold. Cattle eat vegetation along the stream and
their waste ends up directly in the stream. Fencing is a farming best management program that would solve both of these problems and is already used by the Amish to enclose cattle.
Chapter 4

Analysis of Interviews

This chapter is divided into two major sections that first summarize the questionnaire responses and then analyze the responses.

4.1 Interview Summaries

Below are the simple summaries to the questions asked.

**Question 1: Are environmental topics taught in your schools? If so what are they?**

It became apparent almost instantly that those interviewed did not have a clear understanding of the term “environmental”. To help get answers to my questions, I had to give examples like how to keep water clean. In every interview the answer to this question was that children are taught the basics of math, reading, writing and history.

One of those interviewed said that they taught communication in the Amish schools and that this included learning to speak English. Another interviewee added spelling and one used the word arithmetic instead of math. Those interviewed said that the teachers are chosen by the leadership and the teachers are members of the church and are usually women.
**Question 2:** Do your children learn anything at home about the environment?

Again I had to give examples of the interaction of man and the land because of an overall lack of understanding about the term “environment”. There was more variance in the response to this question. Some of those interviewed listed specific examples of things taught at home, while others gave generic answers. For example in two of the interviews the men simply answered that the fathers teach their sons everything they need to know. In another interview however the person answered specifically that his father taught him it is important to leave vegetation along a stream so that the soil does not erode. One of those interviewed mentioned that they teach their children to recycle or reuse materials. Another said that their dad taught them to look for areas on the farm where gullies were forming and plant grass there to prevent the gullies from getting larger. Most interviewees mentioned that they teach their sons but one religious leader told me that they sometimes will teach their daughters.

**Question 3:** What are your views about man’s responsibility to the environment?

All interviewees had the view of using only what they needed with a limited amount of extra produce and milk to be used as cash products. Some of those interviewed were only concerned about taking care of their own land and passing it along to the next generation. One of the men said that he knew he should try to keep things out of the stream. One interviewee was more sensitive and was concerned about his farming practices impacting his neighbor. Another said that when they cut down
trees they only use what they need and leave trees there for future generations.

**Question 4:** Have you or your church members been confronted with any environmental issues? If so, what are they?

Again I had to list numerous examples and in only two interviews did I get any specific input. The environmental issue in the first case involved a nearby landfill that had impacted some of the surface and ground water of several church members. The interviewee in this case mentioned that there was a bad odor associated with the water, but did not know if anyone had become ill as a result of it. The second concern was a shallow well that had sediment problems in it. The interviewee mentioned using a mesh screen to filter out the sediment.

**Question 5:** Do you have any concerns about your Land and water?

When asked this question each of those interviewed could not think of anything in particular. I asked them if they had any soil loss due to erosion and three of those interviewed mentioned that they had some soil loss issues. One water issue that was mentioned was in relation to farms in proximity to the Wayne County Landfill and not the result of the pollution issues within the Sugar Creek. Another interviewee again mentioned that there was sediment in the well water. The only water issue mentioned involving the Sugar Creek was that some of the Amish were impacted by its flooding. One of those interviewed mentioned that the flood of 1969 caused a lot of damage and soil loss on Amish farms.
**Question 6:** What do you know about the streams that flow through your land?

None of those interviewed gave any inclination that they were aware of the polluted condition of the Sugar Creek Watershed. The only things mentioned in each of the interviews were that they were concerned about the somewhat frequent flooding that occurs there and the occasional high levels of soil in the streams.

**Question 7:** In what ways do you and the members of your church use the streams that flow through your land?

In every case those interviewed mentioned that church members that have streams on their farms use those streams to water their cattle. Two of those interviewed said that they would put watering troughs in the vicinity of the streams. Some of those interviewed mentioned that they use the streams for irrigation. Some of the Amish did not have streams on their property, and used springs and wells to water their crops and cattle.

**Question 8:** Are there any recreational activities that involve the streams flowing through your land?

All of those interviewed mentioned that they use the streams for swimming and fishing. Not all those interviewed personally used the streams for that purpose, but they mentioned that there were church members that did. Those that fished in the Sugar Creek said that they had no problems when eating the fish that they caught.
**Question 9:** Have you or any of your church members had any problems when using these streams for recreational or work related purposes?

In every case I was told no. I began to prompt further with questions like: Has anyone ever been ill as a result of swimming in the Sugar Creek or from eating fish caught in the Sugar Creek? I also asked if any livestock have any health issues as a result of being in the Sugar Creek. In every case there was no indication that there were any problems associated with using the Sugar Creek for recreational or work related purposes. Each of those interviewed said that none of the cattle got sick from drinking out of the Sugar Creek, and none of the church members got sick from swimming in the Sugar Creek or eating fish that were caught in the Sugar Creek.

**Question 10:** What is your opinion of the overall water quality of the streams flowing through your land?

Again in every case each of those interviewed were satisfied with the overall water quality of the streams that were flowing through their land. They had no problems using it because they felt it was safe to use for themselves and their livestock. The only thing mentioned was that they were concerned about the water having too much soil in it at times, and that it may not be as suitable for the cattle to drink.

**Question 11:** What kinds of farming practices do you and your church members use?

In every case those interviewed said that they and their church members farmed to meet each individual families needs. They also had a variety of ways to make cash
from their farms. Every church represented in these interviews had members that sold extra produce, milk or both. Some sold eggs and some sold chickens for cash. Produce was grown typically in a smaller personal garden. All of this was done on a small scale. They farmed to meet the needs of their large families and sold enough produce or livestock for cash. All those interviewed said that they and their church members grew crops for livestock which included dairy and beef cattle. They also would typically split up the land and divide it among their children. The farms typically stayed with the same extended family. Two of those interviewed mentioned that there are church members that do not live on farms and work in various other places like buggy shops or bulk food stores.

**Question 12**: What kind of farm management practices do you use to prevent soil loss due to erosion?

Most of those interviewed mentioned that they use contour plowing and that they will plow perpendicular to a hill slope. Most also mentioned that they farm in strips alternating hay and corn and that they rotate their crops in three or four year cycles. They plant oats one year, then wheat, then alfalfa and then corn. One of the men mentioned that some of the soil was not suitable for four year rotation or for a certain type of crop and would handle those areas either with different crops or a shorter rotation cycle. Some of those interviewed said that they leave a strip of vegetation or crops along streams to prevent erosion and others said that they plant grass in gullies
where water gathers during heavy rains. One of those interviewed said that they harvest all of the crops and do not leave any kind of strips to control erosion. One of those interviewed said that the members of his church did not implement any contour farming because they did not have any problems with erosion.

**Question 13:** How do you manage your manure?

All of those that I interviewed said that they used manure for fertilizer. Typically the Amish have a small number of dairy cattle that spend time in a barn or shed every day. Some of the Amish also get manure from beef cattle. Those interviewed said that manure accumulates in these structures and eventually needs to be removed. The manure is then spread on the fields as it is removed from the barns or sheds. The Amish that I interviewed said that they spread manure all year round, and that the longest period between manure spreading is only a few weeks. Each of those interviewed also said that they will use some additional organic and chemical fertilizers. Another interviewed that they taught their children to use manure before it goes stale. Another said that they did not have a need for a separate manure storage area because they typically only had 15 – 20 cattle.

**Question 14:** What is your opinion about the use of farm management practices to protect the land and water on your farms?

None of the Amish that I interviewed were aware of the polluted condition of the Sugar Creek and were not concerned about best management practices involving
the accumulation and spreading of manure. One of those I interviewed believed that they should keep the stream free of sediment for the sake of neighbors downstream. The primary concern however, was to keep the stream clean so that cattle could drink out of the stream. All of those interviewed showed concern about erosion and soil loss and were willing to implement practices that reduced both of these processes.

**Question 15:** What is your opinion about the use of fencing to limit access of livestock to streams on your farm?

The Amish that have access to the Sugar Creek and its tributaries utilize these streams to water their cattle. During the first interview I was told how important it was for the cattle to have clean stream water to drink from. I elected not to ask this question in any more of my interviews since I felt it might imply that I was placing blame on them for the polluted condition of the watershed. Every one of those interviewed said that the Amish farms that had access to the Sugar Creek and its tributaries used these streams to water their cattle.

**4.2 Interview Analysis**

All the data retrieved was qualitative and qualitative methods are often made more effective when the information gathered is placed into categories (Robinson, 1998). Even though I designed my questionnaire around the three major questions of my research, I found that the answers were complex and variable. In order to analyze these further, I divided the answers into six categories. The first three categories are
primarily organizational in nature and aided me in determining if I could draw any conclusions to support my research questions. The last three categories seek specifically to answer my research questions. Again there may be some overlap between categories depending on the answers. The Categories are:

1. **Answers that required prompting or rewording of question:** While I understand a great deal about Amish culture, I still anticipated potential difficulty with the language of some of my questions. In order to bring out the cross cultural difficulties (Colding and Folke, 2001) I realized that some of my answers may need to be prompted or reworded in order to get a response to a question. This can specifically highlight those concepts the Amish are familiar with, and those that are unfamiliar to them.

2. **Answers that were consistent between respondents:** This category is important because it helps determine the commonalities of Amish culture.

3. **Answers that were unique:** The Amish culture is a traditional society and closely governed by the leadership of the church in regards to moral issues and specific day to day practices that separate them from the outside world. I wanted to see if there was any room for individuality when it comes to farming practices and environmental outlook. This category is important because it will show whether individuals within the group can take their own stand on certain issues.
4. **Answers that specifically address Amish culture**: This category is important because it presents information or views that are unique to the Amish culture.

5. **Answers that demonstrate environmental awareness**: I wanted to determine if the Amish had any environmental awareness and in particular if they were aware of the polluted condition of the Sugar Creek Watershed. This category is very important because it will help me to determine if the Amish have been exposed to, or are sheltered from, reports like that put out by the Ohio EPA in 2005 and 2007, or whether they have been impacted by the pollution in any way.

6. **Answers that assess the potential for Amish to implement farm best management practices**: The last category selected, answers the second half of my research question which involves the SCW being in non-attainment status for recreational use due largely to the farming practices of the Amish. The answers in this category will help me see if there is any possibility of Amish doing their part in bringing the SCW to attainment status.

4.2.1 **Category 1: Answers that required prompting or rewording of question**

Any question that I had to explain or rephrase was classified as category 1. The Old Order Amish are a relatively sheltered culture and are not familiar with many of the terms used in popular culture. Popular culture uses the phrase “interaction between
man and the environment”. The Amish culture interacts with the environment but I found that they were unclear of the question when I used phrases like this in my questions. I had to adjust these questions in every interview. This primarily applied to questions 1-4. I typically simplified the questions by removing the word environment and replacing it with words like “forests”, and “streams”. For example:

- Do your children learn how to keep the streams clean in your schools;
- Do your children learn how to take care of the forests at school;
- Do your children learn how farming impacts streams and forests in your schools;
- Do you teach your children how to keep streams clean;
- Do you teach your children how to take care of the forests;
- Do you teach your children how farming impacts forests and streams;
- What are your views about taking care of the land and water; and
- Have you or any of your church members been confronted with any problems with your forests, soil, wells or has anyone gotten sick from drinking water or eating produce.

I also had to do some prompting for questions 8 and 9 when referring to recreational activities. I gave the example of swimming and they would answer in the affirmative and add that they also fished in the Sugar Creek. Additionally, for question 13, the concept of manure “management” was confusing, but when I asked how they stored the manure and how frequently they spread the manure, the question was easily answered. These additional questions led to the answers listed above. It can generally be concluded from
4.2.2 Category 2: Answers that were consistent in each of the interviews.

In terms of questions 1-4, every person I interviewed stated that schools were used to teach the basics. There was some variance when individuals listed individual subjects, but in every case no environmental topics were mentioned in association with formal education. Every one of those interviewed stated that the father passed down the information about farm stewardship to the next generation. Another consistent answer was that land needed to be taken care of so that the next generation would be able to use it.

In terms of questions 5-10, each of those interviewed stated that they use the streams to water their cattle. Every person said that they, or members of their church, fish and swim in Sugar Creek. In every case they stated that were no problems that arose for cattle or Amish as a result of their contact with the Sugar Creek. Also everyone interviewed said that they had no problems when they ate fish caught in the Sugar Creek and all indicated that they believed the water quality of the Sugar Creek was good.

In terms of questions 11-15, all interviewees mentioned that they, or members of their church, were dairy farmers and sold their milk for cheese processing. They, or members of their church, also sold produce, grew crops for livestock consumption, and
used crop rotation though there was some variance to which crops, and how many years they were in rotation. All but one interviewee had erosion problems and they typically used contour plowing and strip farming as a means of reducing the erosion. All interviewees use manure from their own cows and horses to fertilize their fields. All but one of those interviewed expressed the importance of using farm management practices to prevent the loss of soil.

4.2.3 Category 3: Answers that were unique in each of the interviews.

In terms of questions 1-4, unique answers included: a dad telling his son it is important to keep the water that flows through your land clean so that you do not hurt your neighbor downstream; an interviewee being taught to recycle by his father; stating that it was important to take care of the land for the next generation; indicating that there were problems with springs and shallow wells because of a nearby landfill; and an exclusive example of teachings through daughters.

In terms of questions 5-10, one interviewee said that they have erosion problems on several farms in the church. Another said that they have frequent problems with flooding and referred to the major flood of 1969. A third said that they had problems with sediment in a shallow well and had to put in a filter to make the water fit to use. Another person interviewed mentioned that they use the Sugar Creek for irrigation on some farms.
In terms of questions 11-15, one interviewee said that children work at home on the farms and as they grow older the farm is split up and parcels of land are given to them. Another mentioned that many in church grew sorghum cane to make molasses. One answered that produce was grown primarily for personal consumption. Two of those interviewed said that several members of their churches used chemicals on their farms. One interviewed said that they also raise chickens. One answered that corn will end up in the same spot every five years. One told me that they put watering troughs for the cattle along the Sugar Creek. Another said that his father specifically told him to let the grass grow along the stream to prevent erosion. Avoiding plowing in areas that are prone to erosion was mentioned by one person. Another said that his father specifically told him to plow perpendicular to a hill instead of up and down the hill. One said to grow grass in gullies and other erosion prone areas and another said that they leave a few rows of crops in place along streams to help prevent erosion. One said that they do not use contour plowing because none of the people in his church had any problems with erosion. Another said that they used contour plowing and strip farming to prevent gullies from forming. Using manure before it got stale was important to one person and another said there was no need for a separate place to store manure because they only had 15-20 cattle. One said they only go a few weeks at the most where they are not using manure and another said that they plow it under in the spring. One specifically said they spread manure on the fields in the winter time. Two of those
interviewed said that when streams are not available they use springs and well water for cattle to drink.

4.2.4 Category 4: Answers that indicate that the Amish are aware of environmental concerns.

None of those interviewed gave any indication of knowing about the bacterial issues of the Sugar Creek. Only two of those interviewed mentioned anything about the sediment problems in the Sugar Creek, one person mentioned that there were pollution problems in springs and wells as a result of the landfill nearby, and another mentioned that they had problems with sediment in a well and required a filter in order for the water to fit to use. All of those interviewed said that they had no problems when swimming in the Sugar Creek or eating fish caught in the Sugar Creek. All those interviewed said that the schools teach nothing about the environment and only one person said that their father specifically taught them to keep the stream clean. All but one interviewee mentioned that they used different practices to prevent erosion which ultimately lowers stream pollution, but only one made this specific association.

4.2.5 Category 5: Answers that are specific to Amish Culture

In every interview I was told that Amish children learn the education basics of math, English, spelling, and reading at school and that school only goes through the eighth grade. Taking care of the land so it can be passed on to the next generation and
growing and using only what you need specifically represents Amish culture. The fact that none of those interviewed were aware of the polluted condition of the watershed and in particular the bacterial problems that are associated with animal wastes and the primitive treatment of waste is indicative of the sheltered nature of Amish culture.

4.2.6 Category 6: Answers that indicate there is potential for farm best management practices.

Question 3 deals with the view that Amish have about responsibility to the environment and question fourteen deals with the opinion that Amish have about using farming best management practices. One of those interviewed clearly indicated that he was taught to keep the Sugar Creek clean for the benefit of his neighbors. Also I did not ask question fifteen which involved the use of fencing because I did not want to offend the Amish. However in my questioning two interviewees said that they use springs and wells to water their cattle when there are no streams on the land. This means there is an alternative to the streams to get water. Also in every interview the Amish leaders spoke of various farming best management practices such as grass planted in gullies, grass along streams, not harvesting all the crops along the streams, contour plowing, and strip farming which are all excellent for the prevention of erosion. Reducing the amount of sediment loading in the streams is also important in meeting the recreational use standard. In addition to the above erosion control farm best management practices, each of those interviewed said that they use crop rotation as a means of returning
nutrients to the soil and prolonging the life of that soil so that it can be passed along to future generations. Also in every interview it was stated that these practices are passed along to the next generation which indicates that these same practices will be practiced in the future.
Chapter 5

Discussion

5.1 General overview

The problem with the pollution of the Sugar Creek is a cross cultural concern and it was my hope that my questioning would bring to light any barriers to local efforts for improving the watershed that were the result of these cultural differences. Through this study, I aimed to understand the Sugar Creek and the environmental concerns associated with it from the Amish perspective. It was therefore important that my interviewees felt comfortable enough with me to give me their perspective and did not simply tell me what they thought I wanted to hear. I was initially concerned when I developed the questionnaire and began interviewing the Amish that there would be some resistance to providing information to outsiders, as the Old Order Amish are particularly concerned with protecting their community from the outside world. I had initially planned on recording my conversations after getting permission to use a recording device. However, I noticed during the first interview an initial reluctance to answer my questions. I decided that using an audio recorder either offended the interviewees or at least influenced how they answered my questions. I chose therefore to simply manually record (write down) my conversations but even this was met initially
with caution. The response typically involved asking me to repeat why I was there and what kinds of questions I would be asking.

I attempted to approach the questioning from the perspective of the Amish with respect to their religious views and convictions. On a couple of the interviews I knew some of the interviewee’s neighbors and mentioned them by name and this seemed to create a more relaxed environment for the interviews. In total, I conducted seven different interviews that represented eight different churches. Two of the men I interviewed were Preachers for two different church communities. I interviewed six men and one woman. The woman was the wife of a Bishop that I also interviewed. The age range for the people I interviewed was between their mid thirties and mid eighties. The first person I interviewed was the youngest and he also answered the questions with the least amount of prompting. While he was cautious at first, once he realized that I respected his beliefs, he was very willing to share answers with me. The oldest gentleman I spoke with was the most cautious at first but when I told him I was good friends with a non-Amish neighbor of his he warmed up immediately and was very willing to answer questions. The Bishop’s wife that I spoke with was able to answer most of the questions that I asked but kept referring to her husband when I asked about specific farming practices. She was more familiar with what was taught in the schools than any of the men were.

The Amish are clearly guided in all walks of life by their religious beliefs. There is some variation in some of the specific farming practices, but the time I spent during the
interview process verified that the Amish are consistent in their approach to life. All of
those that I interviewed owned their own farms. Every one of them had a simple
approach to the use of the land. While driving and while interviewing I observed the
preparation, sowing and harvesting of crops and the grazing activity of cattle. The
simple, hard working, non-modern ways of the Amish are essential to their views on
pleasing God and reaching heaven one day. Individuality is permitted to a point as long
as personal decisions do not compromise the standards and beliefs of the church. An
individual can choose to use contour farming or not, choose how and what crops he will
rotate and choose what produce he wants to sell as a cash product as long as those
individual decisions do not conflict with a rule of the church. The rules typically apply to
tools or equipment they are permitted for use, rather than what can be grown or not, or
other land management practices.

Their religion impacts how they view the land. The concern or care for the land is
influenced by their religious convictions, but it is based on what they understand about
the land. They have a sustainable approach to the land and use it to meet their basic
needs. They want to make sure that the land will be able to sustain not only the current
generation, but also future generations. For the most part they seem to be responsible
stewards, not only in the sustainability aspect, but also in protecting against the loss of
soil. They have a strong sense of responsibility to each of the families in the church and
this also was evident in the desire to protect the water for the sake of neighboring
farms.
There was, however, a universal lack of understanding of the environmental implications of bacteria in the Sugar Creek and the relationship between cattle, manure and the problems associated with this. They have a stewardship approach to the land, but because they are not aware of the sanitary implications of their farming practices there are currently no measures being taken to prevent the increase of bacteria in the streams. In all of the interviews there were no reports of any health related problems associated with livestock or human interaction with the Sugar Creek. The creek is not safe for recreational use according to the 2005 OhioEPA report, but there is no acknowledgement of concern within the Amish community. It is also interesting to note that none of those interviewed asked me if there was a pollution problem in the Sugar Creek. The presence of fecal coliforms and E coli in the Sugar Creek at the levels mentioned in the report can potentially lead to health issues. Based on the information that I gathered from the interviews it is not clear if the Amish would associate any illness to contact with polluted water. Those that I interviewed seemed to address various issues like erosion when confronted with them because the problems were evident and the solutions for the most part were understandable. There has been no attempt to alter farming practices to prevent bacterial pollution in the Sugar Creek because they are not aware of the problem, not aware of the cause and consequently not concerned about a solution. The religious views mentioned earlier include a concern at least for the neighboring farmers in their churches. If they were aware of a problem that they were creating for themselves and their neighbors action may be taken if they understood the
cause and how to fix it. I was looking for this potential motivation as I asked them questions about their responsibility to the environment and to other people. They would not have access to a 2005 OhioEPA report and the only way they would understand a problem within the Sugar Creek is if they had people in the church getting sick from contact with the polluted water. The report would be an outside “worldly” influence and I do not see the reading of a report as a motivation for changing farming practices. However, I believe that if they could definitely associate illness from firsthand experience within their churches this could possibly serve as a motivation to change practices. The problem that I see from the interviews is making that association and understanding how proper sanitation and farming practices would alleviate problems.

   Education is a key element to promoting responsible environmental behavior. There is currently no environmental focus in the education of Old Order Amish children. The primary focus of the schools is the basics of reading, writing, spelling and Arithmetic. Amish children speak German at home and learn how to speak English during the eight years they attend school. The home, school and church focus primarily on promoting and maintaining the religious views of the Old Order Amish. They do not teach any in-depth science in the schools and as a result they do not understand the importance of hygiene and sanitation and are not aware of the microscopic (bacterial) concerns associated with improper disposal of waste. Based on the answers I received in the interviews and my own personal experience with this group of Amish I would see great difficulty in attempting to introduce environmental teaching in the schools.
The second place in which education takes place is between parents and children. Based on answers to interview questions I can see greater potential in introducing environmental concerns and solutions in the practical education that boys get in regards to farming practices. However the bacterial issue may need to be addressed indirectly through the erosion problem. High sediment loading results in higher bacteria levels within the water column which is a major contributing factor to the non-attainment status of Sugar Creek. Erosion is a problem that the Amish see, and it is a problem they attempt to fix. The cattle in the stream pose a two-fold problem. They defecate directly in the stream and they remove vegetation and create paths which contribute to erosion. The Amish may never be convinced that there is a bacterial problem because they do not understand it and they have never experienced any illness, but they can see that erosion is a problem. There is potential to solve the bacteria problem by solving the erosion problem. Based on the answers to the interview questions I can definitely see some potential in educating the next generation about erosion control through the use of fencing to protect the vegetation along a stream. Again my point in doing this research is ultimately to see the Amish do their part in the cleaning up of the watershed without compromising their beliefs. They are already teaching their children how to prevent erosion and the added feature of using fencing to solve this problem seems to be the easiest way to take care of the bacterial issue.
5.2 Interview Interpretation

5.2.1 Introduction

There are three major components to the interview questions and these are education, awareness and potential action. At no point during any of the interviews did I indicate that there was a pollution problem with the Sugar Creek Watershed and at no point did I accuse the Amish of creating pollution problems for the watershed. The questions were designed to determine if the environment is a part of the religious teaching of the Amish, to see how sensitive the Amish are to the environment in which they interact and to see if the Amish are responding to, or potentially would alter their practices in response to, environmental issues. I also broke down the answers to the interview questions into the six categories discussed in the previous chapter and will discuss each category separately.

All of those interviewed were somewhat uneasy at first when I initially approached them and explained why I was there, and one interview I found that the person I was talking to failed to relax and basically answered questions with a great deal of prompting. I did detect suspicion at first from those interviewed, but no indication was given that they were offended by any of the questions that I asked. There were multiple occasions when I had to give further explanation in order to get a response but none of those interviewed ever said anything like “what are you getting at”, “is there something we are doing wrong”, or “I don’t feel comfortable answering that question”.
All of the answers appeared to be sincere and true representations of the views and practices of the Old Order Amish and were consistent with my personal experiences with them. The final question from my interview was omitted because I felt it would offend the Amish to ask them if they were willing to use fencing to keep their cattle out of the Sugar Creek. I approach the analysis of the interviews looking both at the face value of the answers and how often they were consistent (Manifest content) and the meaning behind the answers (latent content).

5.2.2 Conclusions from answers that required prompting or further explanation

Many of the interview questions required prompting or additional explanation in order to get responses. This is largely the result of cross cultural difficulties. Popular culture in the United States has been inundated with environmental information via television, the World Wide Web and public education. The interview process indicated that the Amish do not teach about the environment in their private schools and their religious separation from the world eliminates the influence of television and the internet. As a consequence of this none of those interviewed understood what I was talking about when I asked them questions that used the word environment. I still asked the question initially in each interview as it was originally worded to see if any of those interviewed recognized the term, but I had to give specific examples and further explanation in order to get responses. There was some degree of understanding about the practical aspects of the environment when using terms that those interviewed were
familiar with, but the actual science behind the environmental problems were not understood. The other words that I had to explain further or give examples for were “recreation” and “management”. The Amish play softball, fish and swim, but none of those I interviewed seemed to understand recreational activities. Also the Amish do “manage” their farms, but when I asked what kind of management practices they used, they were unclear of my meaning until I gave examples. I do not think that the initial lack of understanding of terms prevented me from gathering the information I needed. The flexibility of my interview questions and the conversational manner of my interviews still enabled me to gain insight into the Amish views of the environment, the way they approach education and the potential to change practices that benefit the Sugar Creek.

5.2.3 Conclusions from answers that were consistent in each of the interviews

I had assumed before I conducted the interviews that there would be a certain degree of consistency in the answers that would be given. I had a great deal of personal experience with the Amish and had interacted with them on a daily basis for many years. The consistency in the answers indicates that their religious culture dictates their approach to life and their daily practices. When it comes to the specific rules of the particular church you will see consistent behavior. The permissible side or ungoverned side of life is where you would see individuality or variability in habits or practices. The interviews indicate a consistency in the approach that the Amish have to education. The
individual subjects mentioned were slightly different in each of the interviews but I attribute this to what subjects came to mind. The Amish educate the children enough to be able to communicate with non-Amish and to be able to read and write and conduct business i.e. sell produce, buy livestock etc. The Old Order Amish are especially protective of their culture and are careful not to introduce information (science and history) from outside their culture that would tempt the young people to leave. This is why terms like environment are not familiar to them. The answers were also consistent concerning education at home. The practical side of the Amish way of life is governed by the church leadership and is passed down from generation to generation by the parents. For the most part the men teach the boys how to farm or a particular trade like buggy repair and the women teach the girls about cooking, sewing, and gardening. I do not see any potential for discrepancy in the answers that involved education. There may be some degree of variation in the individual things that are taught at home, but the Amish way of life and the standards of the church are taught by the parents and reinforced by the church and school. The approach to education indicated by the answers to the questions is consistent with my personal experience with the Amish. I had never asked them in my personal dealings if they taught science or environmental issues in the school, but I assumed that these subjects were omitted. I wanted to determine however if anything remotely related to the environment i.e. taking care of the land etc. was ever a part of the formal school curriculum and it is not.
The answers were also consistent in regards to the questions involving problems associated with the Sugar Creek. None of those interviewed had any problems with their interaction with the Sugar Creek and they were not aware of anyone in their churches having problems either. It is more difficult to generalize about the answers to these questions than those regarding education. It is possible that someone in the church may have gotten sick from swimming in the Sugar Creek or eating fish from the Creek and those interviewed were not aware of it. It is also possible that those interviewed or members of the church had gotten sick as a result of interaction with the Sugar Creek, but did not make that connection. It is possible also that this particular culture has developed a resistance to pathogens in the water because of continued exposure to those pathogens. The fact that the answers were consistent in this category indicates that there may be little motivation to change farming and sanitation practices if there is no apparent need to do so. The fact that every one of those interviewed felt that the water quality of the Sugar Creek is good also indicates that they would see no need to alter their farming practices in any way.

The answers were also consistent in regards to overall farming practices which include sowing and reaping practices and use of animal waste. All of them farmed for their own sustenance and all grew a little extra produce to sell to obtain cash. All of the churches had dairy farms that sold milk to commercial dairies. All of those interviewed mentioned that they had problems with erosion and there was a fair amount of consistency as to how the erosion was dealt with. All of those interviewed said that
either they or people in their churches that had access to the Sugar Creek or one of its tributaries used the streams to water their cattle. The two primary concerns with the consistent answers to these questions involve the consistency in manure use and in access to the streams by cattle. These are the two practices cited by the Ohio EPA 2005 report that contribute to the bacterial problems and consequent non-attainment status of the Sugar Creek. This coupled with the fact that there is no apparent problem with the Amish concerning bacteria in the Sugar Creek would indicate potential difficulty in changing practices that are detrimental to the Sugar Creek. These consistent answers do not mean that the Amish don’t care, but their lack of awareness about the problem is consistent with their lack of action.

5.2.4 Conclusions from answers that were unique in each of the interviews

The answers I received in each of the interviews did indicate that the Amish religion and culture is consistent in each of the churches represented. However, there was some degree of variability and thoroughness in the answers that were given. The variability did not indicate a departure from cultural or religious influence and did not represent differences in doctrine or beliefs. The level of thoroughness in the answers given varied primarily due to what I perceived as the comfort level of the person I was interviewing. Those that I was able to establish the greatest deal of rapport with seemed to elaborate more in their answers.
There was very little variability concerning the formal education for Amish children. As I mentioned earlier the only differences in the answers to this question was due to the recollection of the individual subjects. The questions concerning what the Amish taught at home did result in some unique answers. The fact that the practical teaching for farm practices is passed from generation to generation in the home is the same in each of those interviewed. However there are some practices that were only mentioned once. The answers to the question involving teaching at home involved only the personal experience of those being interviewed and not of other members of the church. In each case where a unique answer was given the interviewee referred to what their father taught. There could be a great deal of variability in answer to this question if every individual father from each church were asked this question. Again this is regarding practical teaching like recycling, erosion control, keeping stream free of soil etc. and not doctrinal issues. I have seen in my personal experience some variability in the enforcement of doctrinal issues that are taught at home (e.g. shunning) but the interviews showed no variability in doctrine – only variability in practical education. Thus the need to change certain practices to benefit the Sugar Creek could potentially be taught on an individual basis because this would not conflict with a doctrinal issue.

Some of the variability in the questions that involved general environmental concerns or concerns with the Sugar Creek was the result of unique circumstances. For example, one of those interviewed said that a member of the church had some water issues as a result of the Wayne County Landfill. This issue would only apply to those that
would be in the proximity of the Landfill. Another issue was flooding. This would have a
greater range of influence, but only one of those interviewed mentioned it and that is
because his farm was prone to flooding and he was old enough to remember a
particularly damaging flood. Another expressed that there was a great deal of erosion
taking place on his farm and others in his church. Here again is potential to address
practices that would benefit the Sugar Creek on an individual basis.

When it came to the actual practices for crop and manure management and for
prevention of soil loss all of those interviewed had at least one area that they
mentioned that was unique. This does not mean that other Amish churches neglected to
use these practices, but those interviewed felt these practices were important enough
to mention. An individual that is already implementing practices to prevent erosion
could potentially see the need to put fencing up along a stream to prevent the erosion
that occurs as a result of cattle traffic and grazing.

5.2.5 Conclusions from answers that indicate that the Amish are aware of
environmental concerns

One of the primary reasons for conducting this research was to determine the
level of awareness that the Amish have about the environment in general and the
specific environment (Sugar Creek) that they interact with on a daily basis. If the Amish
have no awareness then there will be no action on their part to alter certain farming
practices. The two Ohio EPA reports indicate that the Amish and their primitive farming
practices are contributing to the pollution concerns of the Sugar Creek. I did not mention this to any of those interviewed and none of the individuals that I spoke with gave any indication that they thought they were polluting the Sugar Creek.

None of those interviewed were aware of the polluted condition of the Sugar Creek and this is partially due to the fact that they are not familiar with the bacteria associated with cattle being in streams or run-off from manure storage areas. Several said that they implemented practices to prevent erosion, but only one of those interviewed made a connection between erosion and stream pollution. This at least indicates that there is some knowledge in the Amish community about some forms of pollution and additional interviewing might result in others with similar understanding. The same individual that understood that soil erosion can pollute a stream also acknowledged that the Wayne County Landfill had created some environmental concerns in regards to polluted springs and wells. The fact that his father taught him the importance of keeping the stream clean for the benefit of the neighbors shows that this awareness can be passed from generation to generation. The only other related answer that indicates some awareness about the pollution is that some of the Amish will not swim in the creek when it is dirty looking after a hard rain.

This general lack of awareness can be attributed to two major things. The Amish are not teaching anything in regards to man’s interaction with the environment in the formal setting of the school and the pollution problem of the Sugar Creek is not impacting the Amish. The Amish getting sick from eating the fish in the Sugar Creek or
from swimming in the creek and making the association between those activities and the illnesses would definitely raise awareness and potentially lead to changes in certain practices if once again they can make the association between current practices and the pollution problem. The interviews indicate that the Amish are not aware that cattle in the streams and run-off from manure storage areas are polluting the Sugar Creek.

5.2.6 Answers that are specific to Amish culture

Another important part of my research deals with the unique approach that the Amish have to the environment and if there is potential within their culture to address environmental concerns by using farming best management practices that will not compromise doctrine. My hope was to see the environment through their eyes and get a feel for how they address the problems they are confronted with as they farm the land.

The formal education of the Amish is very specific to their culture. The fact that they only go to school until the eighth grade and the exclusion of information from outside their culture is very unique. Outside culture is represented by history and science and is avoided in the Amish education and is one of the reasons that the Amish are not aware of the polluted condition of the Sugar Creek and other environmental issues. To try to introduce environmental teaching in the Old Order Amish schools like they are trying to do with the higher orders would be met with resistance because of the fear of influence from a worldly culture. There are many non-Amish that are not
aware of the polluted condition of the Sugar Creek, but the fact that none of those interviewed are aware of what is going on in the watershed is unique to their culture. Being separated from the world includes being isolated from an education that informs individuals about the common problems that occur in the environment as a result of man.

The fact that Amish pass down traditions and practices from generation to generation is not unique to the Amish, but they are more consistent than non-Amish and they are more serious for the most part than Non-Amish. The answers to the interview questions that involved the informal teaching at home were anticipated because of my personal involvement with this culture. These Amish want to pass the land to the next generation, the practices to the next generation, the doctrines and beliefs to the next generation and they want their boys to marry girls from within the church and to remain in the same sheltered environment that the current generation is in. The answers clearly indicate that the primary concern is not the protection of the environment, but the preservation of the culture. They are not concerned about the outside community – they are concerned about the inside community. Take care of the land and be sensitive to your neighbor, but primarily maintain our culture.

The answers to the interview questions also indicate that the Amish believe in taking care of the land so they can pass it on to the next generation and only use the land for what you need. This may not be unique to Amish culture, but it does contrast with the other types of farming that are typical to the area. The amount of cattle by
comparison to non-Amish is small and the only cash crops are typically extra produce just to provide enough money for the Amish to purchase things they can’t produce or make themselves. The fact that the Amish care about the land for future generations would mean there is potential to prevent erosion and the associated bacterial problems.

The way in which the Amish manage their manure is not entirely unique but some of the management practices to prevent the manure from impacting the streams would be unique. The overall sanitation practices of the Old Order Amish are very primitive and none of those interviewed had any kind of manure management that would reduce pollution. Again the lack of management of manure is indicative of the sheltered culture and the lack of problems encountered in the Sugar Creek. Simple practices like when manure is applied or avoiding flood zones could be implemented without compromising Amish doctrine, but treatment in which liquids and solids are separated would be difficult to implement because of doctrinal issues.

5.2.7 Conclusions from answers that indicate there is potential for farming best management practices

Farming best management practices are critical not only to maximize the quality of soil and prevention of the loss of soil, but also to improve the water quality of the Sugar Creek and tributaries flowing through these farms. None of those that were interviewed were familiar with the terminology farm best management practices, but all of those interviewed and members within the churches of those that I spoke with are
using some form of farming best management practices. All of those interviewed gave two primary reasons for implementing certain farm best management practices. The first was to preserve the nutrients in the soil and the second was to prevent erosion. These are two essential needs within the farming community and are clearly being addressed by the Amish community. One of those interviewed made a clear connection between preventing erosion in order to maintain a clean stream. His point was that he wanted the water to be clean for his and his neighbor’s cattle to drink.

The Amish that I spoke with gave many different examples of areas that were prone to erosion and then gave specific practices that they used to solve the problem. All of these were addressed with non-modern practices like contour plowing and planting grass in gullies and other areas that were prone to erosion. The fact that all of the Amish that I interviewed are recognizing environmental problems like erosion and that at least one sees a relationship between erosion and water quality is clearly indicating the potential for other practices that will improve water quality. The key here is that erosion is obvious and even in the case of stream quality the one Amish gentleman was referring to the water looking dirty or muddy.

The problem with addressing the main pollution concern of the Sugar Creek is that you can’t see the bacteria, the Amish are not familiar with the medical – sanitary implications of the bacteria and the Amish according to the interviews are not experiencing any detrimental effects from the Sugar Creek. They can see the erosion and the effects that it has on their land and in one case the Sugar Creek specifically, but I
think it will be difficult to convince the Amish about what they can’t see. However as I said before we can still focus on the visible and I believe there is potential to solve the bacteria issue by simply building on something they already understand. To lower the levels of bacteria these two things will have to happen. The cattle will need an alternate source of drinking water and fences will need to be put up to keep the cattle out of the streams. The interviews revealed that Amish use fencing to keep cattle in a certain area and that some of the Amish use wells and springs to water their cattle. The Amish may not be convinced that cattle in the stream create a bacterial environmental hazard, but they can clearly see that cattle eat the vegetation along the streams and create gullies by heavy traffic to and from streams. By addressing the problem from an understood and easy to see erosion problem the bacteria problem can also be addressed.

The area that I see potential difficulty in implementing farming best management practices is with how they use manure. By keeping fences along streams and allowing vegetation to be established along the stream bank will help reduce the influence of poor manure practices but will not eliminate the problem. The Amish currently have no specific practices that are used to prevent manure from entering streams. If the Amish could see that bacteria is a problem that results in sickness within their church community, then there may be potential to implement practices that would help reduce the impact of manure on the watershed. The interviews showed that once a need is seen and the Amish begin a practice, it will be passed to the next generation by the father.
5.3 Accuracy of interview interpretation

I have had a great deal of personal experience with the Amish and I am very familiar with their overall religious views and convictions. I have spent hundreds of hours conversing with them about their doctrine and practices and interacted with them on a daily basis as neighbors. I had never inquired about their views on the environment prior to the interviews that I conducted. I suspected that the answers that I received in the interviews would be fairly consistent and that there would be very little awareness (if any) of the condition of the watershed. The results of the interviews verified my hypotheses.

I attempted in each of the answer categories to portray the Amish as they really are without any personal bias. There are several areas that I made some assumptions based on my experience with and understanding of the Amish. The first assumption is that I said that the Amish would not be motivated (voluntarily) to implement best management practices based on reading an Ohio Epa report. I did not ask any of those I interviewed if they would put a fence up to keep the cattle out of the Sugar Creek in order to prevent bacterial pollution. I am basing my assumption on my previous experience and on the fact that none of those interviewed had experienced any problems associated with the polluted condition of the Sugar Creek and its tributaries. I can’t say with 100% accuracy that the Amish would ignore the EPA report and not implement practices beneficial to the watershed but I believe based on my experiences
with them and because of the lack of problems that they would see no need to change what they are currently doing.

A second assumption that I made is in reference to the Amish voluntarily instituting environmental teaching in their schools. I had stated that it would be more likely to pass down practices from father to son in the home. Again I did not ask any of those that I interviewed if they would incorporate environmental teaching in their schools. I based my assumption on the fact that the Amish do not teach history or science in the schools because they do not want to expose the young people to any elements of non-Amish society that might encourage them to leave the Amish. This matter of not wanting to expose the Amish children to outside influence was something that I was told by the Amish when I lived amongst them and was not expressed specifically during the interviews. I am not 100% sure that the Amish would refrain from teaching about the environment in the schools, but I believe that they would continue teaching the basic subjects as they have been based on my understanding of their beliefs and practices.

A third assumption that I made is that the Amish would potentially use fencing to keep cattle out of the streams to prevent erosion. I assumed that they would see the benefit of putting the fencing up based on the fact that they saw the benefit of implementing other practices that reduce erosion. It is possible that in the minds of those I interviewed that the need to water the cattle in the stream could exceed the need to put up fences to keep out cattle out of the stream. I did not ask any of those I
interviewed if they would be willing to put up fences to keep the cattle out of the streams because I did not want to imply that they were polluting the watershed. Therefore I am not 100% certain that the Amish would put up fencing to prevent erosion, but I feel that the potential is there because they are concerned about erosion and they do have other alternatives for providing water for their cattle.

A fourth assumption that I made is that the Amish would be more likely to teach environmental issues at home and that they would pass new practices like fencing to keep cattle out of the stream to the next generation. I did ask them what they currently taught at home, but I did not ask them if they would teach new practices. I am not 100% sure that they would use fencing and I am not 100% sure that they would pass it along if they did. I do believe that if the Amish saw the need to use fencing and began to implement this practice that they would pass it along to the next generation because this is consistent with what they are currently doing.

I also made an assumption that the Amish would not likely do anything to manage their manure. I said this partly because they are not managing it now other than the fact that they put it on the fields as it accumulates in the barn. I also made this assumption because I said they do not currently have any problems with their association with the Sugar Creek and they are not aware that the Sugar Creek has bacterial pollution as a result of manure in the streams. I am not 100% sure that manure management would be ignored because I did ask them what they would do to reduce the bacterial pollution in the Sugar Creek. I believe this area would have the least
potential because it would be difficult to convince them that manure is causing problems in the streams when they are not having problems.

I am basing all of the above assumptions on my past experience with the Amish and on the way they answered related questions in the interview. It is possible that I am misrepresenting the Amish in the above assumptions. I feel the most satisfied with the assumption I made about introducing environmental teaching in the schools. Separation from the world is a major doctrinal issue with the Amish and any threat to this would be met with serious resistance. The other assumptions do not directly involve doctrinal issues and could be addressed corporately by the church or on an individual basis. I believe that I am fairly accurate in these non-doctrinal assumptions as well and feel that it is consistent with what I know about the Amish and with the way they answered the questions.
Chapter 6

Conclusion

6.1 Overview

Having done a research project as an undergraduate on riparian corridors and in particular the Sugar Creek Watershed, I discovered that an Ohio EPA report had attributed non-attainment status for recreational use for the Sugar Creek watershed to the farming practices of Old Order Amish. This intrigued me and I decided to research the environmental views and best management practices of the Old Order Amish. My ultimate goal was to see if there was potential for the Old Order Amish to do their part to help clean up the watershed. To do this, the first step in my research was to determine Amish environmental beliefs and their views on using farming best management practices. My concern was that eventually the Amish may be forced to change their practices even to the point of compromising their belief system. I wanted to see if they could potentially contribute to cleaning up the watershed without compromising their doctrine.

On Friday February 19th 2010 an article appeared in USA Today about the EPA working with the Amish in Pennsylvania to prevent cow manure from draining into streams. These streams eventually drain into the Chesapeake Bay where Nitrogen in the
manure is creating an increase in algae and ultimately the creation of dead zones in the Bay. This especially affects the crab industry and aquatic life in general. Chesapeake Bay is a high profile area that has been recognized as environmentally sensitive for decades. For these reasons, the Amish in the Chesapeake Watershed are being addressed by the EPA. The article in the USA Today is a confirmation of the concern that I had about Amish being made to comply. I have not researched this further to see if there has been any conflict within the culture over meeting the mandate.

In Ohio the EPA has attributed at least part of the problem in the Sugar Creek to the Amish and I believe the only reason at this point that there has been no enforcement or pressure is because the Sugar Creek is not a high profile watershed. My research is important and essential to helping both the environment and the maintaining of Amish culture.

While I only conducted seven interviews, they were representative of every one of the Old Order Churches in my study area. Based on the answers that I was given in each of the interviews, I do not believe that the overall results would have been impacted by speaking with additional people. The one woman I spoke to was not as familiar with the farming practices as the men were and did not give any answers that would change the interpretation of the interviews. Speaking with additional women would have indicated whether we could say that Amish women generally are not as familiar with farming practices as men are. Interviewing individual members may have resulted in additional practices being mentioned or additional general environmental
concerns like those associated with the landfill, but I do not think it would have changed
the outcome of the interpretation.

The questions that I asked in the interviews helped me to answer the two parts
of my research question involving the views on the environment and best management
practices, but I think if I could have found a way to address the fencing question without
offending the Amish I would have had a better indication of this practice being
implemented or not. I also feel that the Amish answered all of the questions honestly
and from their true perspective and were not attempting to give answers that they felt I
wanted to hear. I believe I made the right decision not to record the interviews with a
recording device because I feel the Amish may have been uncomfortable answering
questions and suspicious of me.

The Amish are completely unaware of any problems with the Sugar Creek
Watershed and are not currently engaging in any formal education or training about the
environment. This does not mean that the Amish do not care about the land. They are
good stewards of the land and try to take care of it so that it can be passed on to future
generations. They also implement numerous farming best management practices to
retain soil nutrition and to prevent erosion and subsequent soil loss. My research
indicates that the Amish will not be convinced voluntarily to put up fences to keep cattle
out of the streams and to keep manure from draining into streams unless they can see
firsthand that their current practices are resulting in people getting sick when they swim
in the Sugar Creek. My research also indicates that the cattle and manure problem can
at least be partially taken care of by addressing erosion issues along the banks of the Sugar Creek and tributaries providing the Amish have alternative means of watering their cattle. I do not see environmental teaching in the Old Order Amish schools unless mandated by the state, but I do see potential for passing environmental practices from generation to generation in the home. I see potential for individual and church wide implementation of best management practices because other than formal education all of the questions deal with issues that can be dealt with and not affect doctrine.

My first objective had been to determine if the Amish were aware of the polluted condition of the watershed and the hazards associated with that pollution. I did not come right out and ask them if they knew the SCW was polluted, but I had created specific questions in my interview that would indicate the level of awareness. The Amish were completely unaware of the polluted condition of the SCW and gave no indication of experiencing any problems when using the creek recreationally. The only observations made that indicated any awareness of stream conditions was the fact that they noticed that the stream was muddy. There was absolutely no awareness of sediment loading providing substrate for fecal coliform bacteria, nor any awareness of the hazards associated with bacteria.

The second objective was to determine if taking care of the environment was part of the Amish belief system. I designed my questions to determine a general approach to the environment and to see if the Amish taught their children at home or in their formal education at school about the environment. The Amish were not familiar
with the term, but with additional explanation I determined that nothing is taught at school about the environment. The Amish I interviewed had a very limited understanding of environmental issues, but they did indicate a concern for frugal use of the land, preservation of land for the next generation, and that these principles are passed to the children by their fathers. Thus, taking care of the environment in regards to the issues of the SCW is not a part of the Amish belief system, but wise stewardship of the land which can be regarded as “environmentally responsible” is important to the Amish.

The final objective was to determine if the Amish would be able to implement non-modern farm management practices that would help reduce the impact on the SCW. I am very optimistic about the answers I received concerning this objective. The Amish are already implementing numerous farming management practices that are effective in reducing soil erosion. The only concern I have is the fact that the Amish utilize Sugar Creek to water their cattle and this is one of the contributing factors to the current bacteria problem. Some of the Amish are using wells to water their cattle, but it may be difficult to convince all of the Amish to use this method.

I would conclude that the Amish are not going to change the formal education they are providing at school. Environmental education may not conflict with their religious views, but they are only providing a simple basic education in the schools. My research shows that there is potential for environmental awareness and teaching in the homes since there is some measure of this occurring right now. My research indicates
that we can work with the Amish to be more consistent in their erosion control, but at this point the Amish are not going to keep their cattle out of the streams (unless forced to do so) because they do not understand why they should.

I spoke with leadership that represented all of the Old Order Amish in the study area, but I may have had different input if I had spoken with more people. I had chosen to speak with the leadership out of respect for their religion, but I may have found someone that had been adversely affected by the polluted SCW had I spoken with individual church members (including women). I felt that the answers to the questions were honest, but the fact that I was an outsider conducting research may have led some of those that I interviewed to withhold information for the sake of protecting the church. I had elected to throw out my last question concerning using fences to keep cattle out of the stream as a result of a response in my first interview that they used the stream to water their cattle. I may have found someone that was willing to use fences to keep out the cattle but did not ask in subsequent interviews because I did not want to offend them. I have attempted to accurately portray the Amish in light of my objectives but my assumptions could still be biased by my understanding of their culture.

6.2 Suggestions for future work

The Amish in the Chesapeake Bay Watershed in Pennsylvania have recently been forced to make changes in farming practices as a result of their involvement in the pollution of this high profile water resource. Studies could be conducted to determine if
government intervention in the affairs of the Amish in Pennsylvania could have any influence over the farming practices of the Amish in the SCW. Additional insight could be obtained by speaking with individuals in the Ohio EPA about practices that would bring the SCW into recreational use attainment status. Studies could be done to develop a plan for the Amish to implement various best management farming practices that would improve the quality of the SCW. Studies could also be done to get additional information about education efforts with the higher order Amish to see if there would be some techniques that potentially could work with the Old Order Amish. Additional work could be done to see if the utilization of innovative curriculum in the Amish schools would force systemized change.
Bibliography


