Three Mile Island Camp

Sustainability Plan

2008

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In cooperation with the Plymouth State University
Center for the Environment

Plymouth State
UNIVERSITY
Center for the Environment

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To all Three Mile Islanders:

The Sustainability Report presented here was created by our Island Educator, Jamie McMillan during the summer of 2008, with input from campers, staff, and Committee members. It is a proposal for actions TMI might consider taking in order to become more environmentally sustainable. Some of the proposed actions are simple and easy to implement without major effort, while others are more complex and would require discussion and general agreement before undertaking such changes.

The Sustainability Report is informative and the Committee and Staff invite all TMIers to read through it so that we all have an understanding of our current sustainability status and what are some possibilities for the future. No matter what steps TMI decides to take, the Committee and Staff hope that campers will understand that these steps are an attempt to become more environmentally sustainable as a community, and are not necessarily a permanent condition, and that it will take time for the results of whatever steps are taken to be realized.

Thank you for your interest.

The Committee welcomes your feedback and suggestions.

(send comments to Heather Pembrook: Pembrookh@gmavt.net or 802-434-3870)

THANK YOU

Special thanks goes out to all those that helped in the creation of the 2008 Three Mile Island Sustainability Plan. This plan was the compilation of thoughts, interest, help, and knowledge from numerous Three Milers and Plymouth State University staff. The initial Thank You goes out to the TMI Committee, for taking the initiative to start the project, to dedicate the time needed, and for embracing it so well throughout the summer. PSU Staff, Steve Whitman, June Hammond Rowan, and Brian Eisenhauer deserve special recognition for the advising and time provided researching all the interesting issues that arose over the summer. Then most importantly the Staff and Croo at TMI that showed such great interest and willingness to promote changes in an effort to go green on the island. Finally all the campers that provided input took time out of their vacation to work with the Island Educator, who attended the nature walks in rain or shine, and who actively showed a great desire to see success in this project. Thanks to all, 2008 was a great summer and it is my hope to see all that has started blossom into an even more environmentally friendly, sustainable camp.

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Section I

Introduction

A strong connection to nature runs deep throughout Three Mile Island (TMI) Camp, but the way this is expressed has changed over the course of the camp's history. Change has been an essential part of Three Mile Island Camp's history; the island may still appear as it did 100 years ago, but the current operations have a much different impact on the environmental and social aspects of the world. Now is the time to look at Three Mile Island's evolution as a camp, where Three Mile is going, and then take clear actions that will guide the Island and its guests into the future. Sustainability is the next step, by building that interrelation between camp life and the environment to the highest level, so that Three Mile Island's natural and cultural integrity is preserved for many more years to come.

This project came about through a growing interest and concern for sustainability at TMI. It spawned out of many past camper's and Croo's work, but came together through the interest of the committee this past year. The Center for the Environment at Plymouth State University (PSU) was contacted by TMI Committee member Heather Pembrook and a partnership was created to research and write this sustainability plan. From there a student was selected, Jamie McMillan, who was vetted and hired by Will Holmes (TMI Manager) and supervised by Steve Whitman (PSU Adjunct Faculty). In addition much support came from Brian Eisenhauer, Associate Director, and June Hammond Rowan, Outreach and Development Coordinator, from the Center for the Environment, the TMI Committee, and Campers and Croo from the 2008 season.

Information for the report came about through individual conversations with campers and Croo, researching past reports, focus groups, nature walks, and hands on work by Jamie from Croo week through week nine. This summer also included off island excursions to research local food options, energy options, composting toilet management, and various other sustainability related initiatives. This research led to many realizations about the camp, and shed light on the questions and desires that TMI people hold dear.

It has become evident while working with both TMI campers and Croo that they are concerned about the island. To address these concerns it is going to take education, participation, and action toward change. Change however comes in many forms. It can be the redesigning of an area, the reformatting of a Croo or Staff role, or re-investing in the way TMI receives energy and disposes of waste. To think sustainably, TMI must think together and build the understanding of the connections between the different systems on the island and how they all impact the environment. Sustainability in its simplest form is meeting the needs of the present while not compromising the future. Is TMI ready to step into the future?

Over the course of the summer, sustainability was the topic for many discussions. In order to pull this talk together in a way that allowed for good research gathering, five focus groups were conducted. Four focus groups were conducted for campers and one for Croo. These discussions revolved around the participants. Broad questions were asked that were designed to stimulated discussion. These discussions were then recorded for the ease of note taking and then reviewed and used in the formation of the report, especially in the goals sections and implementation actions. A summary of the focus groups can be found in Appendix A. They were extremely helpful and reaffirmed TMI's goal to become better stewards of the earth.

This plan is designed to help inform how TMI can lower its environmental impact in all areas of the camp. The sustainability plan also focuses on how TMI can become an education center where environmental awareness can spread beyond the island to each camper and Croo members home. This is a living document. It should be reviewed, revised, rebuilt, and the TMI community should be continually made aware of it over time. It contains both short and long term goals for all of the aspects of TMI. These suggestions are designed to promote further thought, and to help with actions that will lower TMI's overall impact. If new ideas are presented or more in-depth research is needed on a topic it gives a great opportunity for future Island Educator work. Whenever a discussion arises about the camp, a more sustainable method of camp operation may exist. Committee, Staff and Croo may consult the plan to find options and generate thought on the issue. The plan is also designed to assist future decision making by providing goals, implementation actions, and guidelines for a systems approach. TMI is a wonderful place; let's sustain it for another 100 years!

A Brief History of Three Mile Island

The roots of Three Mile Island Camp spawned from a growing interest in the outdoors at the turn of the last century. Originally, a small lot on the southwest corner of the island was donated to the Appalachian Mountain Club in 1899 by Mr. and Mrs. Eastman. Later that year, more land was donated to the club by Roswell B. Lawerence and then the club purchased all the remaining parcels on the island. By 1900 Three Mile Island Camp had begun. The initial camping parties erected a cook house and 24 tents, which suited their summer camping needs. From then on the camp was to grow into what it is now with many historical marks along the way influencing its character, land use, and traditions.

For the purpose of the sustainability plan, some key historical changes on the island have much significance. It is important to note that the majority of all buildings were erected by the 1950s with the exception of the rebuilding of the launch house in 2000, the NewCastle Composting Toilet facility in 2000, and the more recent structures such as the Paint Shed circa 2007 and new generator shed circa 2008. Along with buildings, energy usage shifted from a small generator for primarily kitchen use to an underwater electric cable stretching to the mainland. This cable was recently replaced in 2005 and supplies all of the current electrical needs of the island. These activities have resulted in changes to operations and the natural environment on TMI and many functions of the camp have grown accordingly.

The earliest Three Milers came with great knowledge of the natural environment. They were in fact the earliest naturalists on the island and since their early efforts much data has continued to be recorded about the species on the island. One significant contribution is the vegetation plot survey started in 1978. This effort continues today and has a great deal of useful information about land use.

The Land Use Plan of 1973 has proven to be one of the most important and highly effective tools in TMI's history. With the creation of the four zones: urban, compromise, productive, and protective and agreed upon regulations for the activities that can occur in these zones, TMI has seen healthy growth of the natural environment and acceptable use of the resources on the island. A copy of the land use plan can be found in the Appendix along with understory and overstory vegetation studies showing healthy growth from a young forest to a more mature one. Development and vegetation cutting has been controlled, and it is easily seen today how natural much of the island remains. This plan was revised in the mid-eighties. The revision was due to the finding of an endangered species, the Ram's Head Lady Slipper, and the end result was the expansion of the protective zone with the addition of areas near the west shore and Hawk's Nest Island and Rock Island. Today the plan is still in use, yet with limited knowledge.

TMI has a rich history and a detailed account of its past can be found in the book, "A History of Three Mile Island Camp". It is this rich history that gives TMI much of its character. Many current events, both on and off island, have once again created a renewed interest in the foundations of Three Mile revolving around the natural

environment. With new knowledge of human impact on the environment and current global and local issues, a broader sense and application of environmental protection needs to occur. TMI must utilize its past to progress into the future environmentally and sustainably.

Global Issues

Current global issues are diverse and most of these issues have an impact on the environment. In focusing on the directly related global environmental issues, climate change, energy, and biodiversity loss, solutions can be found in many ways. Emotional attachment to nature is key to solving many of these global problems. Each of these problems can be solved by embracing the natural environment, working in tune with nature and forming a community that goes beyond the self and into the woods. Three Mile Island provides an example where people can connect with nature. Protecting that connection is vital to TMI's sustainability. In conjunction with that goes proper understanding and acceptance of key global issues that affect both the island and the campers on and off the island.

Climate change is the broad reaching term that describes the affects of global warming, pollution, and other adverse affects from human influence. Climate change may have a drastic affect on TMI. It may cause species to change, storm intensity to increase, irregular weather patterns, and other associated problems. Research has shown that the increased amount of carbon dioxide, methane and other toxic gases being released into the atmosphere from the burning of fossil fuels, agriculture, and waste is trapping sunlight and warming the planet at an alarming rate. It is disrupting ice caps, ocean currents, wind patterns, and species. This is one of the most prominent global issues and Three Mile Island can help connect campers to the issue by helping them learn to reduce their impact on the planet. Three Mile's actions must serve as examples of the small changes that everyone can make in their lives to reduce their carbon footprint.

Energy issues pose another great threat to TMI. The widespread use of fossil fuels to power engines and produce electricity are having a detrimental effect on the planet. In conjunction with these negative environmental impacts the costs of energy are also rising. Oil has been cheap for many years, however demand is continuing to rise and oil reserves are not increasing. The looming increases in cost and the noticeable environmental damage from gasoline in particular are dictating change. This will affect most aspects of transportation and travel options for Three Milers.

Biodiversity loss is another serious concern. Due to habitat loss, fragmentation of open land, deforestation, exotic invasive species, climate change, and heavy human impact, species are dying at a mass extinction rate. Three Mile Island must work to not only protect the island and the lake, but also help campers to understand their impacts and what changes they can create in their communities. Nature has maintained a balance for thousands of years, however, humans are disrupting that balance and the natural environment is now being greatly threatened.

Consumption is intertwined with all of these issues. The overconsumption of goods is causing deforestation, erosion, and declines in natural populations. Current consumption trends are also resulting in heavy consumption of energy. Shipping goods and food from thousands of miles away takes a tremendous amount of fuel. Much of the greenhouse gases warming the planet are due to transporting these goods as well as producing them, in a heavy fossil fuel dependent industry. Controlling consumption at TMI is one of the first steps in becoming sustainable. Reducing the usage of goods, supplies, and energy is the easiest and most effective change possible at TMI. Reducing consumption will require attention before searching for alternatives, and TMI should strive to conserve as much as possible.

ECOlogical Footprint

Life on the island appears simple. However, when all supporting systems are included, from campers travelling from home to Shep Brown's Boat Basin, the launches carrying goods and people across the lake, to the food, electricity, and other daily camp habits, the island living appear a little less simple. In fact, the island lifestyle has a noticeable ecological impact. Measuring this impact is often referred to as ecological footprinting and it provides a way for Three Mile to track its impact and find ways to lower consumption, create less waste, and sustain the Three Mile lifestyle in a more environmentally healthy way.

When finding ways to lower environmental impact there are three key goals:

1) Lower consumption
2) Reduce carbon emissions (and other greenhouse gases)
3) Produce less waste.

Considering that TMI has an impact both on and off island, many areas of environmental impact can be explored. The Camp's ecological footprint includes the buildings, other infrastructure, human waste, solid waste, energy, food, goods and supplies, and transportation. All of these areas have an impact that reaches beyond the island from the initial gathering of raw materials, processing, shipping, to the island usage. TMI's ecological footprint is much broader than the island itself. To better understand ecological footprinting calculators have been derived to estimate how much acreage a lifestyle actually requires.

> For example the initial impact of the island is campers driving to the island; and there are many ways to reduce that impact. If two campers who normally drove separately decided to carpool, then their impact has been reduced in half. If they decide to take a more fuel efficient vehicle then the impact continues to drop, since less fuel was used, fewer materials were needed to transport them, and less carbon dioxide emissions were released. Combining trips and reducing fuel consumption, whether in cars or in the launches, is one important initiative as TMI strives for sustainability.

Lowering consumption is the first step in lowering the stress on the environment. The more we consume the more pollution, waste, and resource depletion is created. Using the example of global warming it is easy to calculate the amount of carbon dioxide (a greenhouse gas) that is produced from TMI's boat usage and electrical usage. The example below demonstrates the large amount of carbon dioxide produced by TMI to support its systems. Reducing consumption of gasoline to power boats and reducing electrical usage are achievable short term goals.

One burned gallon of gasoline produces approximately 19.4 pounds of carbon dioxide. The 2007 fuel bill was $3,396 at a cost of $3.25 per gallon, so TMI consumed 1,045 gallons of gasoline producing 20,271.5 lbs of carbon from boat fuel alone. In terms of electricity, the camp consumes 24,000kwh per year and that equates to 44,024.5 lbs of carbon dioxide released a year. Combine the impact of gas and electricity (64,296 lbs of carbon dioxide) and then consider the propane for the kitchen, the waste disposal methods, the use of the barge, food production, shipping and campers coming and leaving TMI. The sum of these environmental and social impacts that are too difficult to calculate and the numbers become daunting.

TMI needs to focus further and aim for greater sustainability on and off the island. As previously stated, sustainability can be defined as meeting the current needs of a community without compromising the future needs of the community or others. In looking at the future needs, TMI must look at its current ecological footprint.

Ecological footprinting is a way that TMI can determine its Carrying Capacity. The actual definition of carrying capacity does not lead to a good understanding of the questions that many have about TMI. As stated by the Carrying Capacity Network, "Carrying Capacity is the number of individuals that a given area can support within given natural resource limits, without degrading the natural, social, cultural and economic environment for future and present" (www.caryingcapacity.org).

The direct question posed by many affiliated with TMI is "how many people can the island have on it without significantly degrading the natural environment?" This past summer, there was an average of 94 campers per week in addition to the 24 staff and Croo members. In the past, the number of campers has varied from 89 to well over 100. The inconsistencies lead to a disruptive view of how many people the island should hold.

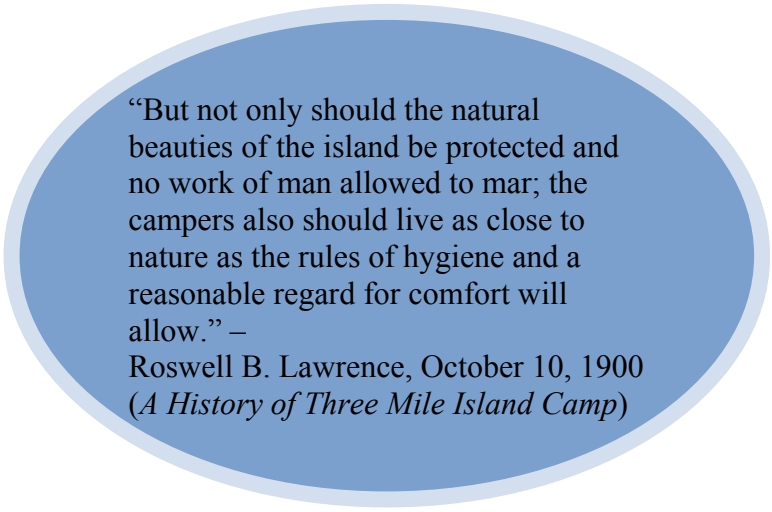
A few important limits based on TMI's footprint lead to a clearer understanding of population limits. The Main House provides one of the greatest barriers physically and culturally on the island. If the number of campers was increased it would either involve the reworking of the current camper tables, or the Croo table would have to be set and then cleaned before the Croo could eat. Financial constraints offer another barrier to increasing the number of campers. Past economic downturns have created lows in camper enrollments. Currently there is no issue filling cabins, but with looming economic troubles driven by fuel prices and other concerns, spending money on new cabins and supplies could lead to a quick increase in camper enrollment followed by years with empty cabins.

The physical environment is of course one of the most significant problems with expanding the capacity of the camp. As required by the Land Use Plan of 1973, an environmental impact assessment would have to be conducted to ensure that no rare or endangered species were harmed, and that no significant erosion or negative impact to the forests would occur. Culturally, Three Miler's are opposed to change, and adding a new cabin would be a significant change which could greatly alter the experience by more people dining, using toilet facilities, and sitting on the main dock..

The potential impact of new structures goes beyond the island, and the footprint of an expansion is much larger than it appears. A new structure requires raw materials that under current mainstream practices are cut, mined, or extracted from a far away place, transported to a mill, then a packaging plant or distribution facility and on to the final store. Then it reaches TMI by truck and by boat. When trying to promote sustainability other impacts need to be considered. The fuel consumption, carbon emissions, deforestation, water quality degradation, erosion, and other effects of this process are enough to halt most any new structure. The broad picture of any purchased good has its positives and negatives, and they too must be weighed accurately to make TMI sustainable. These will be addressed in Section 2.

I. TMI Green Goals

The vision for Three Mile Island Camp applies as well today as it did 100 years ago.



This statement has guided TMI since its inception and will sustain the camp for another 100 years. Maintaining the simple nature of the camp and the deep rooted connection to nature will require change over time. Necessary change to lower the camp's environmental impact and bring Three Milers' closer to nature will happen slowly. Questions about the island and its future sustainability is what prompted TMI to think about what it is now and what it wants to be for years to come. The goals of TMI are intertwined with the vision and give a representation of the broad based ideas and mindset that are so entrenched in the camp.

TMI Goals

The following goals for creating a more sustainable TMI were generated by one-on-one conversations, focus groups, camper comments, and concerns that became evident throughout the summer.

1. To maintain the character, aesthetics, image and feeling that makes TMI such a special place.
2. To be a role model of simple living, sustainable practices, and a community connected to nature for campers, Croo, the Appalachian Mountain Club, and other similar organizations.
3. To actively promote the health of the island by addressing issues that stem beyond the scope of the island and into the neighboring communities, localities, and state.
4. To educate about living lightly on the land by example.
5. To have nature dominate the experience at TMI and to minimize human impacts as much as possible.
6. To think about the past 100 years and plan towards the next 100 years.
7. To bridge the gap between TMI and home by educating about reducing environmental impact both on island and at home.

Lowering the environmental impacts of TMI will take education, time, cooperation, and a commitment to change. When considering the range of impacts from consumption to waste generation, numerous operations on the island need to be examined. These areas include: the built environment, energy, infrastructure, food, solid waste and recycling, transportation, goods and supplies, and land use. An assessment of TMI's environmental impact and recommendations for change follow this section, and are also listed together in the appendices. Awareness and action are what this plan promotes while maintaining the vision of TMI.

Section II

Areas of Investigation

This section is designed to be easily referenced by people with varying jobs, roles, or expertise on TMI. A breakdown of camp operations and recommended short and long term goals is presented in this section. The nine areas of investigation are Infrastructure, the Built Environment, Energy, Food, Goods & Supplies, Human Waste, Solid Waste & Recycling, and Transportation. Each area includes a brief introduction and inventory followed by a brief history of relevant information regarding the environmental impacts for that issue. Implementation actions conclude each section with these actions being repeated together in the appendices. The information gathered for each of these areas is the result of ten weeks of on and off island research. Campers, Croo, and Staff generated many of the ideas and helped in generating the research on camp operations, traditions and facilities.

INFRASTUCTURE

The summary of TMI's Infrastructure is meant to aid in the understanding of the Island's operations.

Potable water comes from an artesian well drilled within the Main Vista. The well provides water to the Main House, Change House, Croo Shower, NewCastle, and other outdoor hose locations. The State of New Hampshire tests the water twice a year and the water is currently safe to drink.

Goals:

- Educate users about lowering consumption. Water resources are under heavy demand and aquifers are diminishing, over consumption stresses the natural environment and users must be educated.
- Make sure operations do not impact the quality of the water.

Communication: Phone communication on the island is restricted to cell phones since no land line exists. The managers have two cell phones with Verizon service that serve as the primary communication method to the mainland. Internet is via a Verizon wireless connection. The two managers' computers have the access program needed to run the internet connection, however only one computer is able to access the internet at a time due to current hardware limitations. Communication policies on the island restrict the use of the resources for the benefit of the TMI experience. Internet is for minimal research use only and phones are not carried by the managers, a reliance on voicemail is used instead. These communication methods are for the TMI staff only, campers are discouraged from bringing similar technologies to the island and are restricted to use of such only in their cabins.

Electricity is carried to the island via an underwater cable from the mainland and then is transported to the various areas on the island via telephone poles and above ground wires. An older diagram of the electrical lines strung on telephone poles is located in the Appendix. Implementation actions related to this issue, including alternative energy potential, are located in the Energy Section.

Propane is used to create hot water and to heat the Kitchen stoves and ovens. Two large above ground storage tanks are located behind the Kitchen by the Palace. Propane is brought to the island via a barge.

Goals:

- Investigate the potential of Solar Hot Water at this location.

Human Waste is primarily collected in vault outhouses, with the exception of the NewCastle facility which composts the solid mater. In the fall, all material from the vault outhouses, and the liquid holding tank for the NewCastle, is pumped out to a barge and trucked to a mainland sewage treatment plant. A more in-depth look at waste treatment on the island and implementation actions is located in the Human Waste section of the report.

Kitchen Liquid Waste: There is a 'gray water' standard septic system/leach field with a grease trap for water from the Main House (no septic). The grease trap is cleaned out periodically by the Croo and is pumped out at the end of the season.

Goals:

- Monitor cleaning products and other wastes entering the drains to ensure that they are environmentally friendly and biodegradable. Alter purchasing habits where necessary.

Shower: A single stall outdoor shower with water heated by a flat panel solar collector is installed for Croo and Staff use only. The system is very simple with a hot water storage tank and a small pump for cycling water through the solar panel. Drainage is through a simple leaching system.

System Upgrade Needs:

- Installation of a differential is needed. This part would regulate when the pump should go on to capture hot water from the panel. If the water is hotter in the panels, the pump would circulate water, but if the water in the panels is colder than the tank the pump would not turn on.
- See Appendix I, PAREI's Solar Site Assessment, for detailed information.

A more detailed synopsis of the systems needs is located in the Plymouth Area Renewable Energy Initiatives (PAREI) assessment located in the Appendix.

Firewood: Wood is the source of fuel for heating on cold days. Fireplaces and woodstoves are located in the Main House, Cook's Cabin, Change House and Rec. Hall. There are also 16 fire pits located around the island. The area underneath the Main Porch and behind the Change House must be filled with wood to serve the needs of a season. In recent years firewood has come from felled hazard trees, but in the past the productive zone has been used for harvest. Campers are instructed to use split wood from under the porch for campfire purposes. This is in an effort to reduce the amount of impact from scavenging the forest for wood.

Goals:

- Collect cut wood and bring to behind kitchen for splitting. Do not leave piles of firewood to rot around the island. It is aesthetically unpleasing and results in more wood being cut than necessary.
- Maintain fire pits and surrounding areas for safety. Trim tree limbs above and around campfire rings. Keep pits dug deep and clean. Make sure rings are well built. Remove unsafe fire pits. -- Chamberlain's pit is directly under a tree, poses a significant safety hazard should be assessed further.
- Remove informal fire pits, and do not allow fire rings to occur in undesignated areas.
- Burning less wood overall is an action that would reduce the island's impact. Fewer trees would have to be cut and less air pollution would result.

BUILT ENVIRONMENT

Introduction:
Many of the buildings on TMI are historic, providing a rich context that the camp's character revolves around. Maintaining the camp's character goes hand in hand with maintaining the buildings as they are an essential part of the camp. Minimizing change to the general aesthetics is an integral part of work on the island for Croo and volunteers; ensuring that the correct paint is used and a building is standing strong is very important. Recently a surge of new buildings have been erected. They have been well accepted by Three Miler's however the general opinion held by campers is they do not wish to see more buildings. This opinion became evident throughout the focus groups. Nature dominates Three Mile and new buildings are at odds with that notion. Additional buildings also put more pressure on the maintenance needs of the camp. The camp's built environment holds tradition, history, character, function, and importance to the existence of the camp. Careful planning must go into protecting this.

The following Inventory table outlines TMI's current structure and is excerpted from the 2004 Long Range Plan.

Inventory:

Structure	Approx Build Date	Description	Recent Modifications & Long Term Plans
Rec. Hall	1967	Adjacent to the Main dock, used for ping pong, games, dances, and conservation education programs. Also used for boat storage in the winter.	Minor electrical code completed in Spring 2005. Code compliant glass to be installed in southwest corner. Minor preventive door maintenance planned in 2005.
Retreat	1930s	The Retreat is a small, wood and stone building in the southwestern portion of the island used for quiet reading in the summertime.	Remaining minor electrical code issues corrected in spring 2005.
Change House	1967	Small one-story structure used as changing rooms for summertime use of the waterfront. Converts for winter use with a wood stove and bunks.	Wood stove insulation and flooring was brought up to code in 2003 and 2004. Electrical code work completed in spring 2005.
Tower	1900	Two story apartment.	Renovated in 2008 as a two bedroom apartment for Staff members.
NewCastle	2000	A 6-stall Clivus Multrum composting toilet.	New methods of handling the material implemented in 2008.
9 vault-style outhouses	1930s?	Simple outhouses. No leach fields. Waste is pumped out by barge in the fall and trucked to a mainland sewage treatment plant.	The "Breezy 3-holer" is being considered for replacement with a composting toilet. Challenges will include thin, rocky soil, and difficult to access location. The "Palace" floor

			replaced in 2005.
Power Shed	1950s?	Location of island power transformer and distribution panels.	Will no longer be needed for electrical distribution after 2005; will probably be used for tool storage.
Office/Store /Doghouse building	1950s?	One story structure in southern central part of island used for camp store, office, and storage/spare bedroom	Minor electrical code issues corrected in 2003.
7 crew cabins, 1 manager's cabin (Oak Knoll)	1930s	Two and three person cabins at southern end of island.	Croo lofts removed in 2004. Electrical wiring problems corrected in 2003; remaining electrical problems to be corrected in Spring 2005. Committee would like to design and build possible replacement cabins within next ten years.
Three staff cabins	1930s	Two person cabins used for senior staff members.	Three cabins converted to staff use several years ago. Electrical code problems were corrected in 2003.
46 wood frame camp style camper cabins, most with private wooden docks	1930s	Traditional cabins with space for two cots, two small tables and open front porches.	Two cabin roofs are replaced each spring. Each cabin roof is replaced every 20 to 25 years. Staining, porch floor replacements and minor window repair are performed as necessary. No major changes are planned for the cabins in the immediate future.
5 tent platforms	1950s	Wooden tent platforms with canvas tents and flies; most are adjacent to cabins.	Staining and screen repair are performed as necessarily.
Launch House	2000	Two boat slips, wood working shop, and upstairs storage for maintenance materials.	Mail boat and ice is causing the outer wall to bow in. Work on dock needs to occur to solve this problem.
Main House	1900	Kitchen, Card Room, Main Room, Dining Tables	Extension to roof over north west corner is planned to protect the floor.
Mail House		Used for PFD's, Paddles, Oars, and other boating needs, as well as outdoor storage space.	

(*Revised from 2004 Long Range Plan*)

Relevant Historic Information:

Over the past eight years a surge of building has occurred on Three Mile Island. Beginning with the now slightly larger launch house and larger "NewCastle" in 2000 and the new Paint Shed in 2007, a new Generator Shed in 2008, the renovation of the Tower in 2008, the proposal for an addition onto Oak Knoll (due to the increased size of the current managers family), and the possibility of a whole new Rec. Hall, the ambition to build is once again in Three Mile's foresight. Previous to this century, the last buildings constructed were those in the dock area after having been destroyed by fire in 1965. There have been no new camper cabins since the 1930's with the exception of some new tents in the 1950's. So why after all this time has the issue of space become once again

so prominent? Partly it is due to more staff and a larger Managers family, but other reasons have influenced this.

Through many camper conversations, focus groups, nature walks, and Croo interaction it has become overly apparent that people want the character, aesthetics, and feel of Three Mile Island Camp to remain as much as it did in the past as it does now. The need for space should be met by recent building projects. The renovation of the Tower allowed for Staff housing for two, the Maintenance Supervisor and Island Educator, and no longer are any Staff members living in tents. The Paint Shed gives ample space for storage and work space for maintenance projects, and the NewCastle is a model of Three Mile's goal to achieve a balance with nature by striving for sustainability. However with the Sustainability project's focus on the near future, Three Mile must make sustainable decisions to preserve the qualities that are so important to the camp.

Building projects are still outlined for the Camp's near future. An addition to Oak Knoll will probably occur if all the permitting is acquired, and the Rec. Hall is in need of major repair or replacement. Oak Knoll and the Rec. Hall both sit very close to the water, which by NH state law restricts much of the possibilities for removing vegetation or changing the buildings' footprints. Recommendations for both are very similar: minimize environmental impact, reuse as much as possible, use local materials, minimize waste, and do not build in excess. While maintaining the goals for TMI and continuing the mission for sustainability these projects should only better the camp and be done in such a way that the character and aesthetics of the current camp is kept.

Implementation:

Short Term Goals:

- Keep up on maintenance.
- Avoid building new structures.
- Do not increase the non permeable footprints of buildings.
- Investigate the possibility for longer lasting roofing material. Roofs are replaced frequently at TMI and asphalt shingles are a waste material once used. Metal is much longer lasting, wood is all natural, and other options exist.
- Always use green building techniques. Some examples are passive solar lighting, local materials, long lasting materials, certified lumber, etc.

Long Term Goals:

- Increase the number of composting toilets through a series of conversions and replacements.
- Solar Installations: the Launch House roof provides an ideal location for solar photovoltaic panels. It does not supply enough space to fulfill all of TMI's electrical needs, but would supplement green power while being a powerful educational component to TMI's mission of sustainability. Other recommendations for solar can be found in the Appendix in the solar site assessment from Plymouth Area Renewable Energy Initiative (PAREI).

- Oak Knoll:
  -Increase space in the most efficient manor and try to minimize the amount of impermeable footprint needed to make the cabin more livable for a family.
  -Use green building techniques.
  -Be very conscious of proximity to water and possible impacts to water quality and shoreline vegetation.
- Rec. Hall:
  -Remodel or renovate if possible, a new building would require many raw resources and generate a tremendous amount of waste.
  -Use green building techniques: passive solar lighting, local milled/cut lumber, long lasting materials.
  -Redesign if desired to allow for photovoltaic solar panels.

HUMAN WASTE

Introduction:
The outhouses at Three Mile Island are more a part of the culture than anything else. For many, these facilities characterize the experience that campers strive for when they come to Three Mile Island Camp. However, the Inners and Outers (e.g. vault style outhouses), with the exception of the NewCastle, do not prove to be the most sustainable method of handling and disposing of the human waste. More ecological and more pleasant methods exist for handling the material. This section goes in depth about the less-talked-about daily operation of the Three Mile Island outhouses.

Inventory:

- 9 Vault style outhouses
  These are simply designed outhouses that contain a holding tank in which the urine and fecal mater are stored. In the fall a barge is hired to come and pump out the outhouses, and the waste is trucked to a mainland sewage treatment facility.
- NewCastle
  A six hole composting toilet system commercially made by Clivus Multrum. Beginning in 2008, a dedicated compost bin was constructed to batch compost the material from NewCastle to neutralize it into a safe state that can be spread on the soil. Previously the composted material was buried on the island directly from NewCastle with no additional composting. This method will allow for the Clivus to be emptied in larger batches with fewer intervals of empting. In addition it will allow for hot temperatures to generate in the outdoor compost bin that will bake down the humanure to be less matter and contain little or no pathogens.

Relevant Information:
The current method for pumping off the waste is NOT environmentally friendly. The vault outhouses date back to some time in the 1930's and current knowledge about the energy used to transport the waste, the carbon dioxide emissions from the transportation, water quality issues, and disposal issues from the sewage generates great concerns about their use. The Clivus Multrum Composting system is an effective, ecologically friendly and low energy system that provides an environmentally friendly way to handle human fecal matter and urine.

The NewCastle is well liked by campers. When properly maintained there is no odor and the knowledge that composting is better for the environment is generally valued by campers. However, among many others the Clivus appears to be a system full of problems and not effective on the island. This is generally not true about composting toilets.

The Clivus was forced onto Three Mile by AMC higher management in 2000, and a lack of proper education still exists today about how to operate it properly. TMI's methods for disposing of the composted matter by burring are an acceptable manner of doing so. No New Hampshire regulations exist about proper and lawful disposal of the material. Currently, New Hampshire regulations are for municipal sewage treatment and composting of this type is not included, and is often referred to as a backcountry system where minimal regulations exist. The NH Shoreline Protection Act of 2008 may have some effect on regulating the disposal. As long as the material is deposited over 250 feet from shore, the TMI method of disposal meets the criteria outlined in those NH laws. Clivus Multrum recommends that the material be buried under at least six inches of soil, and this is what TMI has been doing. If the liquids continue to be pumped off island, than no regulations affect that part of the system. However if a leach field was constructed, proper permitting and regulating would be involved. In a phone conversation with a representative from Clivus Multrum it became clear that our system is working well and the only comment about our system was that we are emptying it too often.

Through extensive research involving a day trip to visit composting toilets used by the Squam Lakes Association, a phone conversation with Clivus Multrum, information gathered from the "Humanure Handbook,"(Jenkins 2005) and a great deal of additional research on the topic it has become evident that the Clivus is a good system for Three Mile, but could use some improvement. The material that leaves the Clivus is raw compost, which is why Clivus recommends burying it. However if the material is batch composted outside of the Clivus in designated bins for a period of at least one year the compost would become hot enough to allow for thermophylic bacteria to further break down the material as well as creating temperatures hot enough and long enough to ensure that all possible pathogens would be killed. A method of doing this is described in Appendix E. After having gone through this process, the material could be safely dispersed in the forest without having to be buried. This would greatly solve the problem of trying to dig a big hole in a very rocky island.

As far as the law in NH is concerned, after much research and phone conversations with Mike Rainey from NH Department of Environmental Services (DES), it has become clear that no NH regulations are specifically written for the kind of composting occurring at TMI. An email from DES regarding TMI's composting questions is below. The exact regulations and comments from DES can be found.

> The relevant regulations pertaining to the spreading of compost derived from wastewater or human waste are Env-Wq 1600, the NH Septage Management Rules and 40 CFR Part 503, the federal sewage sludge regulations. These regulations are mainly focused on the regulation of sludge from municipal wastewater treatment plants and septage from domestic onsite septic systems. You won't find any direct references to composting of human waste except as it relates to the composting of municipal sewage sludge. In general, the composting process itself requires a permit. Depending upon the level of microbial inactivation and vector attraction reduction attained during composting, a second permit would be required to spread the compost. Unfortunately, I suspect that the process you are contemplating is not directly covered by DES rules and is a bit like fitting a square peg in a round hole. Source: DES, 2008

As described above, no direct law addresses what is occurring at TMI. The process for permitting for land application would require some conversations and a site visit by DES. The primary concern of DES is human health. As long as the Clivus Material is kept safely away from campers and spread in an area where it would not be used for gardening or affect the surrounding surface waters, then DES would probably write an exception and list steps for TMI to take to ensure safe handling of the material. An example of such an exception can be found from a pilot project done by Dartmouth College.

Located in Appendix F are copies of two letters written by DES for this project. The contact from DES handling this project is Michael Rainey; he is extremely knowledgeable on the subject of composting regulations. These letters show partly what would occur if TMI took the incentive to contact DES to acquire an exception to NH septic regulations. The process for site inspections and permitting would be costly, both with finances and time, and DES is much more concerned with larger issues, such as municipal sewage plants. Using proper judgment and ensuring the proper maintenance of the system is the most essential part of composting. The most important part of this process is to ensure that anything unsafe is not done and that the composting process is done correctly. The implementation actions below are designed to make the TMI outhouses more sustainable, and they focus on composting. Composting is an ecological human waste disposal method that is not widely used and not directly covered by law. However, it is undoubtedly the most sustainable step for the Inners and Outers, and a big step forward for the island.

Implementation Actions:

Short Term Goals:

- Increase the education to both campers and Croo about composting toilets.
- When the bin inside the Clivus Multrum gets full, continue to batch compost the material outside of the NewCastle, so that the material can be properly composted and then dispersed on the island.
- Evaluate all outhouses for replacement with composting toilet systems.

Long Term Goals:

- Begin replacing the other outhouses with composting toilets systems. Continuing the use of Clivus Multrum systems would keep things simple. They are also very effective systems. The Inners should be the first outhouses replaced. The Breezy Triple should be re-evaluated for a composting toilet system and one should be installed. The Palace which is mostly used by Croo and Staff would be a good first choice for replacement with a two hole, one bin composter, and if the University was rebuilt as a composting toilet facility the existing holding tank for liquids from the NewCastle could possibly be used eliminating an initial need for the construction of a leach field. If a commercial composter was used, such as a Clivus Multrum, electricity would be needed for venting fans and possible other reasons. Electricity in remote parts of the island could be accomplished with a small solar panel mounted high in a tall, healthy tree with no obstructions in front of the panel. An electrical wire could then attach the solar panel to a battery pack located inside the building. Composting toilets can also be made very simple, eliminating the need for electricity. When the human manure is composting properly, no smell should be apparent, and it should be just as pleasant as the NewCastle is now.

SOLID WASTE AND RECYCLING

Introduction:
Carry In and Carry Out is the motto that prevails for handling garbage at all AMC facilities. At Three Mile Island Camp *Carry In and Carry Out* goes to another level with the involvement of a boat to take anything off the island. Much waste is generated by Three Mile Island Camp: the kitchen, office, maintenance, store, campers, and other activates all generate waste. Much of this waste can be eliminated and following the motto of reduce, reuse, and recycle. Abiding by this philosophy can go a long way to increasing the sustainability of the island. Taking time to change purchasing habits, compost, and recycle will considerably reduce the amount of garbage created by TMI.

Inventory:

- TMI has a Waste Management Dumpster at TMI parking area at Shep Brown's Boat Basin.
- TMI is committed to the recycling of aluminum, steel, plastic #1 & 2, corrugated cardboard, mixed glass, and paper waste (i.e. copy paper, box board, cereal boxes, paper bags and other paper products). Currently, these materials are taken by Leroy Stillings, a subcontractor on the Mainland, to the Meredith town transfer station for a fee.
- Recycling of used batteries and compact fluorescents. All of these materials are currently taken to the Meredith transfer station by Staff or Croo members on either a town run or on their days off.
- Slop buckets containing food scraps with meat or other fatty substances are taken to the dumpster at Shep's.
- Composting of all vegetable, fruit, bread, brown paper napkins, and other organics takes place in a three bin composting unit located by the burn pile.
- There is a burn pile by the paint shed for construction material and other waste that is deemed safe for burning.
- Hazardous waste, i.e. old paint and chemicals are taken to the Meredith transfer station on designated hazardous waste days.

Relevant Historical Information:

Waste disposal has experienced much improvement over the course of TMI's History. Previous methods for dumping of trash consisted of trash pits on the center of the island, burning the waste, and sinking it in the water off of Hawk's Nest Island. Over time it was realized that these methods of disposal had a negative environmental impact and significant change occurred. This year it became evident that the camp's current methods of solid waste management were insufficient. Insufficient, meaning that more was ending up in the dumpster instead of recycled or composted. Over the course of the summer of 2008, receptacles have been added to collect paper waste (i.e. copy paper, box board, cereal boxes, paper bags, etc.), used batteries, and compact florescent bulbs to be recycled. In addition, compost bins were added in several locations. The change from white napkins to brown napkins occurred for multiple environmental reasons, and has

resulted in the ability to compost them instead of trashing them. Change does not stop here.

The slop buckets are the next big waste item to be addressed. Each week approximately 15 slop buckets are generated. Slop buckets are five gallon buckets with food scraps from meat, fatty substances, and camper's plates. These buckets are currently taken to Shep's and dumped in the dumpster in the TMI parking lot. From there the slop attracts pests, generates an unpleasant odor and leaks out of the dumpster and into the TMI parking lot. For many campers, this is their first experience at the beginning of the week. Campers park next to a smelly, leaking dumpster. Finding an alternative method of disposal would accomplish many things. It would give a better first impression to campers, help in creating good relations with Shep's, reduce waste disposal costs, and take work off of Croo by not having to carry heavy, slop filled, buckets to the dumpster.

Implementation:

Short Term Goals:

- Clarify and unify a system to collect recyclables and compostables.
  - -Properly label all receptacles with similar, easy to read, long lasting and fade resistant signage.
  - -Use like type buckets/receptacles that are long lasting for each recyclable or compost bucket (e.g. Composting – all green five gallon buckets, Slop – all white five gallon buckets, Recycling – all green trash barrels, Trash – all other receptacles).
- Increase education efforts for Croo, Staff, and Campers on the reasons for composting and recycling, how to do it properly on Three Mile Island, and how composting and recycling can be done at home.
- Rebuild the recycling shed at the TMI parking area for ease of recycling by campers and for a storage area for TMI recyclables.
- Decrease waste!
  - -Approaches such as buying in bulk, not buying products with excessive packaging, and eliminating unnecessary items will decrease waste.
  - -Buy post consumer recycled products.
  - -Buy products that can be composted or recycled.
  - -Consume less meat so that less slop is created. Educate campers about finishing food while eating so that slop is not created.

Long Term Goals:

- Find an alternative disposal method for slop buckets.
  Possibilities include:

-Find a local farmer who would take the slop to feed to pigs.
-Put the slop in the Clivus so that it can be composted in an enclosed environment where animals would not be attracted and the slop could be regenerated into soil. Bones still would have to be left out, due to the difficulty in composting them, and all slop would need to be covered in a layer of sawdust to eliminate odor or flies. This could solve the imbalance problem between the two bins in the Clivus. And could help fill up the two hole bin at a rate closer to the four hole bin.
-Add meat, fatty substances, cheese, cream, etc. to the compost bins if properly covered. A sufficient amount of brown matter (leaves, napkins, straw, wood shavings, etc) would have to cover the material to eliminate odors, detract pests, and trap heat to help the process along. A removable wire screen/lid could also be put over the top to eliminate animal problems.

- Any possible method would work, however the first step in the process would be consuming less meat and generating less slop and then adding it to either Clivus compost or the outside compost bins. Keeping the waste on island is the least energy intensive and TMI would be able to benefit from all the perks of composting.

ENERGY

Introduction:

Energy consumption at TMI has been steadily increasing over the camp's history. This steady increase coincides directly with a steady increase of TMI's environmental impact. The electricity used by TMI can come from many places; it might be coal, hydro, or nuclear. All of these sources are contributors to environmental degradation. Coal is a contributor of global warming, hydro-electric dams can significantly alter ecosystems, and nuclear has serious waste disposal issues. Taking control of the camp's consumption, working to lower it, and finding clean renewable ways of generating power are essential steps in sustainability. TMI is already ahead of the game in this category, but has a long way to go.

Inventory:

- Underwater electric cable from Pine Island (Mainland) to the Center Vista.
- Electrical lines and telephone poles see Appendix G for a diagram.
- Thermal flat solar panel shower for Croo.
- Solar sun showers for campers
- Generator.
- Kerosene.
- Propane.
- Firewood
- Usage estimates for appliances, see Appendix.

Relevant Historical Information:

One of the first things a camper might see upon approaching the island on the Appy is the use of solar thermal energy panels on Batch Village's Croo cabin roof. From that first impression, campers come to enjoy the lack of electricity in cabins, and the use of solar sun showers. However, TMI uses a great deal of energy when all things are considered. Electrical power comes from the mainland and then to all Croo & staff cabins, community buildings, maintenance buildings and the office. Total on-island consumption of electricity in a year is approximately 24,000kwh. This is a considerable amount that is largely used to power the Kitchen Hobart dish washer and the refrigerators. Historically this number was less, and without sacrificing luxury, there are ways to lessen this consumption. Some ways to address these heavy energy consumers, which TMI is

already practicing, is to only run full loads in the Hobart, keeping equipment clean and properly operating, and keeping the refrigerator doors closed as much as possible.

Campers and Croo are committed to the goal of sustainability. People want the island to stay the same. However, through focus groups it became very evident that a change to preserve TMI for the future, such as solar panels, would be greatly received. The Committee is also committed to the goal of lowering energy consumption. Taken from the 2004 Long Range Plan - TMI is striving to:

1. reduce overall on-island power consumption;
2. reduce reliance upon mainland generated power; and
3. provide educational demonstration projects for island visitors.

In an effort to achieve these goals the camp had an energy audit conducted in 2003 by EnergyWorks of Portland Maine (now called ReVision Energy). Their report is provided in Appendix H. This audit lead to a strong understanding of consumption and some possibilities that exist, but lacked a strong sense of implementation actions. This year, TMI became a member of the Plymouth Area Renewable Energy Initiative (PAREI) and a solar site visit was conducted on September 6, 2008. The solar site visit helped to provide an understanding of how to make the Croo shower more efficient, the potential for solar photovoltaics on TMI, and the potential for thermal hot water for the kitchen. A report from PAREI can be found in the Appendix I.

The energy usage at TMI should never increase. If anything it should be decreasing. More efficient appliances, removal of high energy draw items, and renewable sources should all work toward a green future at TMI. With the report for PAREI in mind, the comments and knowledge from campers, and other research conducted this summer, these short and long term goals should guide TMI towards more sustainable energy usage.

IMPLEMENTATION

Short Term Goals:

- Lower consumption
  - -Educate everyone about turning off the lights and shutting down & unplugging unused items.
  - -Remove refrigerated water fountains. Water from the well will naturally be cool at 55 degrees. Water fountains are still needed so options would be to either remove the compressors in the existing ones or to install new water fountains that did not require electricity. Instead the pressure created from the well pump would power them. Education would be important in this change to not just remove what people are used to.
  - -Use only compact florescent light bulbs and get rid of old incandescent bulbs, recycle the compact fluorescents if they become broken.
  - -Whenever replacing an appliance get the most efficient (energy star) appliance available.

- Install a differential on the Croo Shower so that the water stays hotter for longer and less energy is used by the pump.
- Goals for firewood and propane can be found in the Infrastructure section on pages 14 & 15

Long Term Goals:

- Install Photovoltaic Solar Panels on the Launch House Roof.
- When remodeling, renovating, or rebuilding the Rec. Hall make necessary changes to allow for Solar Panels in the future.
- Continue research and efforts to install and use as much solar as possible on TMI, and to use net metering if possible. This allows for unused energy from the panels to feed back into the energy grid off of the island, and generates a credit for the island in the many months that the camp is not being used. In other words, TMI would be an energy producer for the grid in winter and pull most of its energy from the grid in the summer.

FOOD

Introduction:

Escaping the time consuming routines of daily life and relaxing at TMI is one of the most appealing parts of the camp. Especially when the only obligation a camper has is to come to a meal after the bugle has blown and then to feast on that meal they did not have to prepare! Yet, with the importance of the meals in regard to sustainability, "food" issues offers a great opportunity to lower TMI's impact, and to educate campers about what they can do at home. Food purchases provide an opportunity to support agriculture and the economy of the Lakes Region rather than factory farms thousands of miles away.

Current Food Providers:

Sysco, Hood, Moulton Farms in Meredith, and local grocery stores – Jackson Star, Meredith, EM. Heath, Center Harbor.

Relevant Historic Information:

For many campers food is one of the greatest aspects of their TMI experience. Good food, good people, a good place, how can anyone go wrong? Food through TMI's history has gone through good and bad times. Much of that has been due to the cook. Currently the food is delicious. Sysco has been providing the overwhelming bulk of TMI food for decades. They can provide all the food needed, are easy to work with, and they are part of the norm. Moulton Farms has been a recent addition to the food providers at TMI. They have better produce, are located five miles away, and are more ecologically friendly than Sysco. However not all produce from Moulton Farms is local. TMI purchases fruit from them which comes from Florida, California, and other far away places. Also some of their vegetables can come from afar. However, when corn is in season, it comes from their farm, and much of the lettuces and other local produce they sell comes from the region. Careful examination must take place with all of TMI's food providers to ensure the most healthy and sustainable options.

Food can most easily be controlled by purchasing habits. More than searching for all local ingredients, altering what is purchased is the first and most important step. For example, buying less fruit or fruit that is grown closer to the island would have a huge impact. Continuing research for alternatives should be ongoing. The implementation actions of this section should help not only the cook, but many other involved Three Milers. The food is very tasty at TMI, and now we can take it further and make it sustainable.

IMPLEMENTATION:

Menu:

- Less Meat:
  Meat has an enormous environmental impact. The natural fisheries are almost completely fished out. Cattle are one of the leading causes of Global Warming and require huge amounts of land for grazing and corn production. General practices of animal production are cruel, unhealthy, and environmentally inconsiderate. When meat is used it should be sourced from local farms to ensure that practices the farm uses are ecologically healthy and humane.
- More Veggies:
  Serving more vegetables is a healthier solution to eating meat that offers a lower environmental impact. When a vegetable is local there is a much simpler growing process, waste can easily be composted, they are easier to transport, and can often be organic or naturally grown.
- Local & Organic Foods:
  When food comes from a local source you can ensure its quality, build a relationship with a farmer, and get more nutrient rich food. The average piece of food comes from over 3,000 miles away and this shipping can be a great contributor to greenhouse gases. Big business agriculture tends to grow large mono-crops. These mono-crops are water and petroleum intensive, and strip nutrients and fertility out of the soil. Organic foods have not been sprayed with harmful chemicals for pesticides or fertilizers, which are petroleum, based, and are much healthier and tastier.
- Fair Trade Coffee:
  Coffee production is a leading contributor to deforestation, and often the labor practices associated with coffee production are very poor. Fair trade coffee ensures that the labor is fair and promotes shade grown coffee which helps to eliminate deforestation and help curb global warming. Several local operations roast fair trade coffee beans in the Lakes Region. They are more costly but the quality is worth the cost.

Food Waste:

- Compost more of the waste from the kitchen and meals.
- Compost material from Slop Buckets –In Clivus or in Compost bins
- Educate everyone about the reasons for taking only what you will eat. Food that is put on a camper's plate needs to be composted or thrown out. Any food that is left on the serving trays may be served to staff and Croo.

Short Term Goals:

- Buy from local farmers as much as possible.
- Prepare and serve meals more oriented toward locally grown, in season, produce.

- Whenever possible, have Moulton Farms provide their own produce/local food, or purchase from other local farms.
- Have Croo or campers go to local berry farms during season to pick berries for the Baker (For example Croo jobber to pick fresh strawberries from nearby farms). This however could have its own negative environmental impact as it would require personal transportation and the environmental costs of driving would have to be accounted for.
- Produce some food on-island.

    a. **Begin Gardening on Island:** Buying local produce can get expensive and many farmers do not have a big enough operation to fulfill TMI needs. On an island of forty-three acres there is plenty of space for a small garden, and plenty of need and desire from both campers and Croo, and able labor to help the gardening continue into the future.
    b. **Good Garden Location:** The burn pile area behind the Paint Shed.
    c. **Reasons for this location:** Close to compost, kitchen, water, and tools. There is adequate good sunlight, would be easy to clean up and convert to better use, i.e. gardening not trash dumping area. In addition, this area already has strawberries and mint growing there.
    d. **Limitations for this location:** Soil has been contaminated by burning trash. Nails, other metal objects, and chemicals have leached into the ground. Also the leach field poses a similar ground concern. Solution is to build raised beds. The raised beds could then be lined on the bottom with cardboard and filled with food generated compost. This area does not get full sun, it gets good sunlight but not perfect. Solution for this is growing plants that do not require perfect sun.
    e. **Food worth growing**: Salad green mix (mesclun), nasturtium, various herbs (basil, oregano, cilantro), bib lettuce/red lettuce, and squashes (zucchini and summer squash). Other vegetables would also work. However, the most promising crops would be the salad mixes as they are fast growing, produce a high yield and could satisfy all the summer salad needs.
    f. **Maintenance involved:** Initial construction of raised beds and moving finished compost from bins to beds. (The finished compost will need to be moved anyway). It is important to remember that this area has historically been used for the burning of trash and painted wood. As a result, the soil is unsuitable for growing plants for human consumption. The raised beds must be entirely made up of newly composted material. Initial planting would occur in the spring. This will involve either one or two scenarios. If volunteers are willing to plant seeds at the end of April or early May and it can be planted in stages while continuing to be weeded occasionally until the start of camp, then this is ideal. Or seed starters and small plants can be purchased to get TMI started in the spring and then seeds can be planted Opening Weekend. Maintenance during the summer will involve picking, weeding, watering. This would not take much time and would be of great interest probably to many campers and even Croo.

Long Term Goals:

- Continue the gardens and start gardening more. The front porch vista is another good location due to sunlight. However it would be very labor intensive to start and require harder maintenance due to its location. Yet it does get good sunlight. More importantly would be the addition of more gardens to the burn pile area, and the emphasis should be on their importance to TMI and the educational opportunities.

GOODS AND SUPPLIES

Introduction:
Four areas of study are combined in this section: the Store, the Fun Spot (in particular Death World), the Office, and the Paint Shed. TMI's purchasing habits have a great impact on the environment. They help to encourage or limit products which are environmentally friendly or damaging. Researching and being watchful of the products purchased, and ensuring that they are the most environmentally friendly options makes a huge difference in TMI's ecological impact. Buying products that are local, organic, post-consumer, recyclable, contain no packaging, are reusable, do not contain volatile organic compounds (VOC), and are biodegradable and environmentally friendly make a significant reduction in Three Mile Islands Camp's environmental impact. In the mission for sustainability this section is not designed to be a shopping list, but instead to steer purchases into a more environmental direction. The Natural Step framework included at the end of this plan will also be useful in evaluating purchase options.

Inventory:

- Store:
  -See store price list in the Appendix J
- Office
  -2 new computers for the managers
  -1 MacBook computer for Island Educator
  -1 combined printer/copier
  -2 color printers
  -General office supplies

- Death world (Located in Fun Spot)
  -Wasp & Hornet Killer (Green Thumb + Ortho) 6 cans
  -Ant Spray (Ortho + Raid) 8 cans
  -Flying insect Killer (vistorpest) 1 can
  -Roach spray (TAT) 1 can
  -Termite Killer Dust (Dexol) 1 can
  -Insect Repellent (Eckerd + Deep Woods Off) 4 cans
  -General Bug Killer – Fogger (Hotshot) 1 can
  -Liquid bait Ant Killer (Revenge + Raid + Gerro) 9 boxes
  -Fly Catchers 2 boxes
  -Mosquito Dunks (Summit) 6 boxes of 100
  -Moth Balls 13 boxes
  -Squirrel Traps 4
  -Squirrel Bait (D-CON) ~ 16 boxes

  (Inventory for Death world was completed earlier in the camp season, some products have been used and more have been purchased.)

- Paint Shed
  -See "What Paint do I use?" in Appendix K.

Relevant Historic Information:

Purchasing habits have changed greatly over the course of TMI's history. For example oil paint is being phased out for acrylic and products in the store are changing. However, many of these changes have happened due to the suggestions of campers or Croo simply because someone bought something different. Some conscious efforts have happened before, but now is the time to bring them all together in an effort for sustainability.

Over this past summer a conscious effort began. With many people dedicated to the environment and a strong willingness to learn many things at TMI are changing. The greatest example is the quest for biodegradable soap. Soap from Sysco is cheap, very cheap, but it is questionable about its effects on lake water quality. Through research, and a strong commitment by Manager Will Holmes, TMI is now purchasing soap from Vermont Soap Works. It is organic soap from Middlebury, VT and it comes with no packaging. It is quite expensive in comparison to Sysco soap, but is much nicer to use and better for the environment. It is noticing these traditions of having soap in each cabin and then questioning if the camp is doing its best that perpetuates sustainability. Other significant changes from this year include the change from white to brown napkins, post consumer recycled paper in the office and wind up flashlights in the store.

Campers have received these changes well. The brown napkins provoked conversations about sustainability and the soap was a huge hit. Campers all want to see TMI be eco-friendly and the willingness to see change for the better is prevalent in every camper. In addition these changes are all examples of how campers can make changes in there own home so that TMI's sustainability can reach far beyond the island.

Implementation:

STORE

- Order green products in bulk.
  -Food Co-ops and bulk orders of sustainable store supplies. Hanover and Lebanon NH have food co-ops, and local natural food stores could be used to stock up on sustainable goods.
- Do not go to Wal-Mart or other big box stores. Buy from locally owned businesses and keep the economic benefit in the Lakes Region.
  -Alternatives could be ordered in bulk from a co-op or wholesale business and stored in space above the store, in the office, or in dog house.
- Less T-Shirts - One T-shirt for one season, get all the managers and t-shirt purchasers on the same page, give last years t-shirts out on volunteer weekends instead of printing new t-shirts, use organic cotton, find alternative gifts for volunteers that are more eco-friendly, etc.
- Consult the "Better World Shopping Guide" and other information sources that lead to products that are local, organic, fair trade, from sustainable businesses, companies with good employee benefit records, etc.
- Buy natural toothpaste and other goods. (Tom's of Maine, Dr. Bronners, etc.)

- Reusable grocery bags with the TMI logo, and travel mugs with metal inside.
- Provide healthier snack foods (does not mean that you have to get rid of candy), -Local and organic is always best, if not some big businesses have better practices and healthier food than others. The "Better World Shopping Guide" describes this in detail.

OFFICE:

- Use paper made from Post Consumer recycled products.
- Purchase Energy Star appliances when replacing old equipment.

DEATH WORLD:

- Always ask the question "is it necessary?"
- Find the root of the problem and solve that before resorting to chemicals (e.g. if something is getting eaten cover it up better, metal trash cans, proper fitting doors, plastic over the mattresses, etc.)
- Follow the directions and don't use more than necessary.
- Get rid of DCON*.

*The managers this year decided that it should not be used and was unnecessary and environmentally harmful. It still exists in Death World so it needs to be disposed of. DCON can kill much more than just squirrels and is a very powerful poison that should not be introduced into a natural environment. One of the primary reasons for deeming it unnecessary was the significant squirrel population decline this past year and that although listed in closing procedures it actual has not been put out in the past couple of years minus few specific problem areas.

PAINT SHED:

- Use low VOC (volatile organic compounds) paints.
- Use latex not oil based paint.
- Use Tung oil and linseed oil instead of polyurethane.

OTHER:

- Change liquid soap dispensers to large Dr. Bronner's pump bottles, such as outside of the NewCastle.

TRANSPORTATION

Introduction:

The island in its current operational phase would not exist without the aid of motorized watercraft. Currently, the five boats the camp owns and operates run on gasoline engines which come with a series of different environmental problems. Gasoline comes from fossil fuels, stored energy that comes from deep down in the earth. Current supplies of petroleum reserves are not increasing while world-wide demand is. Fuel costs are continuing to rise and the negative environmental impact from fossil fuels is enough to warrant looking into alternatives. In addition to boats which are an obvious transportation 'must' for the island, TMI is heavily reliant on cars. From the campers coming and going to the island, to Croo and staff doing town runs, trash runs, store trips, and other off island runs; cars are heavily used by TMI. TMI must look at ways to lower its consumption of gasoline, consolidate trips, and switch to alternatives.

Inventory

- Appy
- Sea Dog
- John Boat
- 2 Aluminum boats

- All town runs are done with Staff or Croo personal vehicles.

- The barge, operated by Island Services; used for emptying the outhouses, bringing gravel to the island, major infrastructure/building projects and other uses.

Relevant Historical Information:

Campers, gear, food, and supplies all get greeted at Shep's by one of the camp's launches. Every day the Appy V leaves the island at 8:45 AM, 11:45 AM, and 4:45 PM headed to Shep's. On almost every run there is at least one person or some type of object getting transported. In addition the Appy makes an extra run every Saturday to greet campers at 2 o'clock in the afternoon on the mainland. However, with the enforcement of no special launches the boats still are making numerous trips. The Sea Dog gets used heavily for baggage on Saturdays as well as the Aluma crafts, and the John boat. Then it is used for trash runs on Tuesdays and Friday mornings, food runs throughout the week, Wednesday night nature presentations, and other uses throughout the week. The Aluma crafts and John boat, outside of baggage day, tend to be used as Croo/staff transport for town runs that run shorter than the time between a launch. Besides camp boats many other motorized boats come to the island.

The campers are allowed to bring a power boat and use a slip provided by TMI. The slips are designed to hold two boats each. However, with the increasingly larger boats often one slip is filled by just one boat. In addition, when a large object or quantity of material needs to come to the island, the barge, operated by Island Services, can be called to the island. At least once a year the barge must come to pump out the outhouses, but it is often used more than that. Off of the water, one of TMI's greatest environmental impacts comes from the mainland; it is the operations that occur on the mainland that support TMI that have a dramatic environmental impact. The growing of food, shipping of goods, and the personal vehicles of campers and Croo have some of the greatest impacts.

The reliance on personal vehicles to both get campers to and from the island, as well as being the mode of transportation for all town trips, has an immense environmental impact. Instead of striving to find more parking for TMI, the camp needs to look for a way to minimize the amount of parking needed. Encourage carpooling, mass transit, consolidating trips, making fewer town runs, etc. TMI must be conscious of everything from on-island operations to happenings on the mainland, and should integrate sustainability throughout.

Implementation:

Short Term Goals:

- No idling of boats.
- Make fewer trips, combine trash runs with scheduled trips, use carts not cars to move trash once on the mainland.
- Create a system for allowing camper pre-visit communication to encourage carpooling, public transit, and more environmentally friendly transportation alternatives through the TMI web site.
- Schedule fewer launches. Experiment by only having two launches one day of the week, if that works do it another day, continue reducing launches until a problem arises and then backtrack to the most successful amount of launches.

Long Term Goals:

- Electric Appy
  -Designs and plans have already been created by Mark Lindsey, he is very investing in this topic and would be of great help to TMI and has offered many of he resources as long as TMI bought all the materials.

-This vessel would create no wake, be silent, have no emissions and could be recharged by renewable energy.
-Would take a longer time to cross the lake, creating a good community building experience; however the launch driver's schedule may have to change.

- Diesel Engines in boats:
  -Could run on vegetable grease or Bio-diesel (would require a TMI pumping station to hold the fuel on the mainland, especially since Shep's does not have diesel fuel). Diesel would also be more fuel efficient as well as offering many fuel choices.

OPEN SPACE AND HABITAT

Introduction:

In today's world, intact natural ecosystems are diminishing quickly. Over-use, fragmentation, resource extraction, development and other human activities are rapidly degrading the natural environment. Three Mile Island boasts a healthy forest rich in species diversity. This is essential to the long term health of the island. A healthy and diverse forest provides shade, habitat for plants and animals, prevents erosion, produces a sustainable supply of wood for on-island use and is aesthetically pleasing. As a result, Three Mile Island is a place where people can escape the business of modern life and connect to nature. It is imperative for Three Mile Island Camp to continue its endeavors of preservation of the natural environment by continuing sustainable land use practices, and furthering its research about the natural environment.

Relevant Historical Information:
Prior to its purchased by the AMC, Three Mile Island was logged. Then it was briefly used for sheep farming before it became a camp at the turn of the last century. The first sucessional forest was primarily yellow birch. Then a forest of mixed hardwoods and white pines grow up. Due to forest succession, the composition has changed to American Beech and Eastern Hemlock trees dominating the forest tree species. A more in-depth environmental history can be found in the chapter "Environmental Changes at Three Mile Island Camp" found in the book, "A History of Three Mile Island Camp." In addition to this essay, the power point on TMI's website of Marge Holland's presentation effectively and simply tells of environmental changes on the island.

Some of the earliest Three Milers were amateur naturalists. Their work can be found in the books and reports stashed around the island, and the work of some of these naturalists can be found where non native vegetation and was planted from long ago. However, the most relevant and recent data has come from Marge Holland, Jay Maciejowski, and William Clapham. Through the Land Use Plan and the vegetation plot survey started in 1973 and continuing to today, strong data exists about environmental change on the island. Overstory and understory graphs showing change in composition and density over time can be found in the Appendix C. These graphs show an increase in forest species diversity and help to show the benefit of a Land Use Plan. In addition, a tree survey has been conducted for many years which identifies trees that may threaten the infrastructure, such as building or power lines. These trees are known as "hazard trees" and are removed as necessary by the Croo, volunteers or arborist due to the level of expertise required. A copy of the 2008 Hazard Tree Survey is in the Appendix L.

The changes on TMI all have a profound impact on the environment. To control these changes the Land Use Plan has proven to be very effective. Findings about the Land Use have led to recommendations and changes to help foster proper land management on TMI. A summary of these findings are outlined below.

Findings: The importance of the natural environment on Three Mile has become increasingly evident throughout the summer. The interest and excitement spawned by Three Mile's diverse plants and animals has run throughout every week.

Implementation:

-Revise LAND USE PLAN:

Four Zones comprise Three Mile Island. Hawk's Nest, Nabby, Rock, and Blueberry Island all belong to the Protective Zone. The boundaries for all zones are laid out the same as in the mid-80's revised land use plan (see map in Appendix), and the descriptions are all still applicable (see land use plan in the Appendix). However with changes in camp operations and modern attitudes some recommendations for change are listed below for each zone.

URBAN:

No further expansions of permanent footprints are recommended. Any additions or new structures must have approval of the Committee. The full environmental impact of the project must be determined through an Environmental Impact statement presented to the Committee. Suggestions include the following:

- Maintenance on structures for general upkeep, repairs, and renovations should continue on a timely basis.
- Maintenance of the landscape should be equally important to that of structures, meaning that:
  - Trails in the Urban Zone should be kept well maintained to provide a smooth clean surface for walking and carts.
  - Wood and debris cut from hazard trees should be promptly brought to the firewood area (in back of kitchen) for splitting and stacking by Croo. Piles of brush should be cut up and removed either for burning or naturalizing.
  - The Main House Vistas should be cut yearly for maintenance of views.
  - The Burn Pile should be phased out of the trash dumping area and used for storage of reusable goods, composting, a campfire ring and other purposes for sustainability. The area should remain clean and NO materials that are either painted, plywood, pressure treated, or non natural should be burned in the burn pile or

anywhere on the island. These non-natural materials should be properly disposed of in the most environmentally friendly way. The tradition of an end of the year burn does not need to end. What need to change are the materials getting burned and the ambition to have the largest, biggest, hottest fire possible. The unnatural materials that end up in the burn pile are very toxic to air and ground quality and the area is littered with nails and scrap metal. It is also an aspect of island safety considering how damaging an out of control fire could be when situated right in the heart of the Urban Area.

- The Urban Area should exemplify a perfect balance of human impact and environmental needs while complying with any local and state regulations, such as the NH Shoreline Protection Act.

COMPROMISE:

- Minimal cutting around shoreline. Cutting will be permitted that maintains vistas but does not remove vegetation all together. Cutting should be done in accordance to the NH Comprehensive Shoreline Protection Act.
- Felled hazard trees should be used as firewood if needed. Eliminate piles of brush; either cut for firewood or naturalize the debris.
- Prevent new campfire rings, phase out unsafe ones and keep ad-hoc pits from being created.

PRODUCTIVE:

- The need for a firewood harvest should be minimal if cut hazard trees are collected and brought to the area behind the Kitchen for splitting.
- Instead of firewood, trees for lumber might be harvested for an on-island building project, such as reconstructing the Rec. Hall arises.
- Best Management Forestry practices should be used whenever cutting is done. Jay Maciejowski is the best to ask about what practice is most appropriate.

PROTECTIVE:

- Use this area for educational purposes.
- Maintain trails by minimal pruning, and removing segments of downed logs to keep trails open.
- Prohibit raking.
- Maintain proper trail blazes so that people know where the trails are and so that they stay on them.
- Create interpretive signs so that campers can walk and learn about flora and fauna, geology, plot studies, and more.

Section III.

LOCAL AND STATE REGULATIONS

TMI needs to follow all local and state regulations. Maintaining good relations with the Town of Meredith and paying close attention to changes in governmental regulations will help TMI follow applicable laws. When considering sustainability and TMI's environmental impacts, certain regulations are most pertinent. These regulations are listed below and are meant to give brief descriptions, but not exact definitions. More rules apply; these are only the most prominent.

NH Comprehensive Shoreline Protection Act
In 2008, new rules have been set in place in a statewide effort to protect water quality. The Shoreline Protection Act establishes waterfront buffers up to 250 feet back from the high water mark. These buffers are broken into fifty foot distances with stricter regulations for buildings, tree and vegetation removal, and other shoreline activities the closer you get to water. A more detailed look at the law can be found in Appendix M. The Shoreline Protection Act regulates much of the space on the Island. All of the zones on the island come into contact with this regulation and proper knowledge of the act must be used whenever work is being conducted within 250 feet from shore.

NH Composting Regulations
A detailed description of these can be found in the Human Waste portion of Section II. No direct law applies but the regulation Env-Wq 1600 applies. This is a lengthy law mostly written towards municipal sewage treatment and septage from household septic tanks. Permitting is required to compost but special regulations would have to be written by DES to apply to TMI. In the Appendix an example permit process is provided. Similar efforts would have to be complete for TMI if the committee chooses to get that involved with composting.

Meredith Town Zoning and Permitting
Planning and zoning laws in the Town of Meredith apply to Three Mile Island. Permits must be obtained for new buildings and any other Town regulations must be followed. If an activity is in question it is best to contact the Town of Meredith.

Section IV.

FUTURE DECISION MAKING

Lowering Three Mile Island Camp's environmental impact will be an ongoing process. These processes will involve many decisions, in which sustainability should always be incorporated. The vision and goals should be part of all decisions, whether made by the Committee, Croo or volunteers these goals should persist throughout camp decisions. However, to further assist the decision making process a more refined set of objectives can be used to ensure well thought out sustainable decisions.

"The Four Sustainability Objectives" taken from The Natural Step for Communities (James & Lahti) provide an excellent tool in assisting in decision making. These objectives are broad reaching and encompass TMI's specific goals while keeping the broad sense of the environment in context. These objectives go beyond the island and help the earth as a whole while helping Three Mile Island camp thrive for another 100 years.

"The Four Sustainability Objectives"

1. *Reduce wasteful dependence upon fossil fuels, scarce metals and minerals that accumulate in nature.*

2. *Reduce wasteful dependence upon chemicals and synthetic substances that accumulate in nature.*

3. *Reduce encroachment upon nature.*

4. *Meet human needs fairly and efficiently.*

These objectives should be used to evaluate any purchasing or policy decision. This can be done by simply asking "Does this option satisfy the four objectives or is there a better choice?" In addition to these objectives the implementation sections, repeated together in Appendix N, should be a guide for future changes at TMI. If new ideas or questions arise, not specifically addressed in this plan, it could become the focus of research for the Island Educator during the summer. Striving for sustainability is a hard task, but each step forward makes a huge impact and the environment, campers, and Croo will all benefit. Remember the vision and the goals, keep progressing, and make a difference. Three Mile Island Camp can become sustainable.

APPENDICIES

A. Focus Group Summary
B. Land Use Plan + Map
C. Overstory & Understory Data
D. Long Range Plan
E. Maintaining the Clivus Multrum
F. Composting Letters from DES
G. Electrical Line Diagram
H. Energy Works Audit
I. Solar Site Visit assessment (PAREI)
J. Store Inventory List.
K. "What Paint Do I Use"
L. Tree Survey
M. NH. Shoreline Protection Act
N. Implementation Overview

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