

The Future of Wire Bridge Farm



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INTRODUCTION

In 2004, the Center for Environmental Studies (CES) at Williams College acquired the Wire Bridge Farm parcel from John Tietgens as an addition to the Hopkins Memorial Forest (HMF). The parcel is located at the northeastern edge of HMF, near the Williamstown/Pownal border, and is bounded by the Hoosic River on its eastern edge. It is a total of 73 acres, with approximately half taken up by a steep wooded slope and the other half by open field. The CES also has the option to purchase 37 more acres to the north by September of 2009, which would give Williams College ownership of the property up to the Vermont border.

There are many unique aspects of this parcel that made it an appealing purchase for the College. These include the large open field, the thermal spring, the fens, and the edge of the Hoosic River. The parcel was purchased with an eye toward making the best use of all these elements. It was also purchased to promote the HMF Mission Statement, which is to promote education and research primarily, and low-impact recreation secondarily.

As an environmental planning project team, our job was to explore possible uses for the site and to assess which use or uses we thought would best align with the goals of the many people we interviewed (faculty, staff, administrators, and students). Our principal client was Drew Jones, the HMF Manager. We also worked closely with the Committee (hereafter, the Committee). The proposed alternative uses for the site include the status quo, long-term ecological research, short-term ecological research, agriculture and composting, and multiple use. While all of these alternatives incorporate multiple use to some capacity, the last alternative is that which has the widest range of options for use of the site.

Through an evaluation matrix, our team weighed the benefits and disadvantages of each alternative to identify the best use of the land. Our analysis included seven factors: educational

value, research value, recreational value, legal and regulatory feasibility, financial costs, environmental impacts, and town-gown relations. The results of the matrix give multiple use as the best option, followed closely by short-term ecological research.

Based on these results and on our detailed study of the Wire Bridge Farm parcel, we hope that the Committee will place considerable weight on our conclusions. We recommend that they use our study to come up with an action plan for the site and to start implementing it in the near future.

SITE DESCRIPTION

The Wire Bridge Farm property sits along the east slope of Northwest Hill and continues across the adjacent bottomlands to the Hoosic River (see Figure 1). While the entire parcel is 110 acres in size, the College has purchased only the southern 73 acres at this point. The remaining 37 acres may be purchased in the next four years. Our analysis addresses the entire parcel, assuming that the College will proceed with the purchase of the remaining third.¹

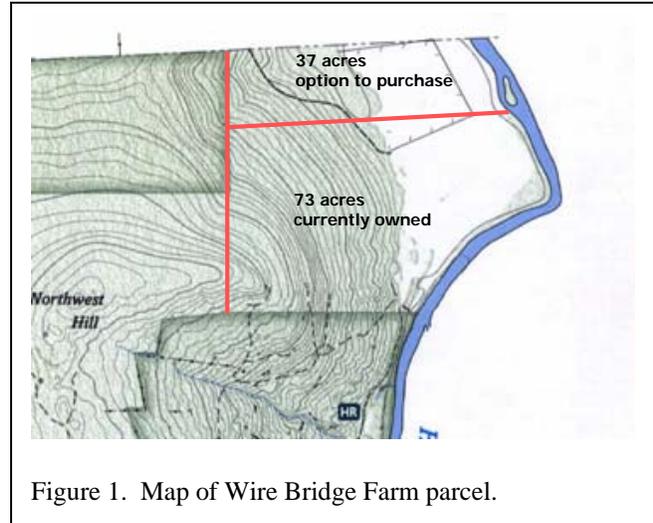


Figure 1. Map of Wire Bridge Farm parcel.

The Hoosic River forms the eastern border of the land, with the Steinerfilm complex situated just across the river to the southeast, and Route 7 and the Boston-Maine Railroad

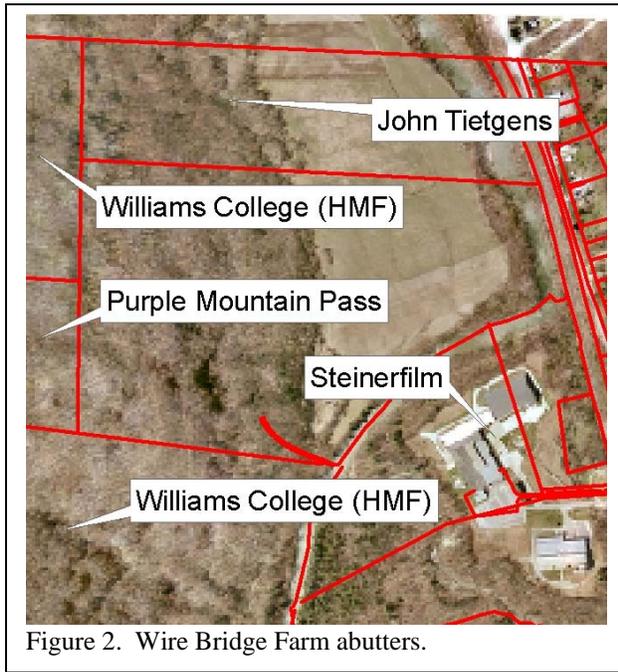


Figure 2. Wire Bridge Farm abutters.

running along the opposite side of the river to the east (see Figure 2). The second part of the Tietgens parcel lies to the north. This other parcel ends at the Massachusetts/Vermont border. The northern part of the western border of the land abuts existing HMF land. The Purple Mountain Pass development sits alongside the remaining part of the western side of the property. HMF property also

¹ Interview with Drew Jones, March 9, 2005.

makes up the entire southern border of the Wire Bridge Farm parcel. The addition of this new property, therefore, connects the northeastern and southeastern parts of HMF.

Main access to the site is currently by way of a mile-long gravel road that leads off of Northwest Hill Road in Pownal, VT, across private land to the western edge of the Tietgens parcel. Part of this deeded right of way is shared with other property owners, and it is largely



impassable during the winter months. The drive from the Williams campus to the property by way of this road takes about 20 minutes. Access by foot is provided by the Hoosic River trail, which enters the property's southeast corner (see Figure 3). Hiking this 1.3-mile trail from the HMF Rosenberg Center to Wire Bridge Farm takes approximately 35 minutes. One other potential means of access exists in a second right of way that crosses over the Hoosic River and extends to Simonds Road (Rt. 7). This deeded right of way extends 100 feet eastward on the river from the location of the old collapsed wire bridge (the one that gave the farm its name).

Unfortunately, access via this route would involve the construction of a bridge over the Hoosic, which would be very costly.

The property can essentially be thought of as three separate zones as one moves from west to east: wooded slope, open field, and riparian forest. The western side of the property is extremely steep, with a 33% slope. This slope is wooded with a diverse array of deciduous trees, native and invasive shrubs, and abundant wildflowers, making up a rich, mesic forest (see Figure 4). Overall, the wooded area covers just over half of the parcel. The trees are all relatively young, however, as most of the slope was intensively logged in the 1970s. The slope also

contains numerous seeps, creating an interesting mix of vegetative communities.² The soil of the top of the slope is Farmington-rock outcrop complex, meaning soils are shallow, yet well drained.³ This soil type typically also contains limestone outcroppings. Further down the slope are Pittsfield & Nellis loams. These soils are deeper than those of the Farmington-rock outcrop complex, but are also well drained. A main characteristic of these loams is that they are very stony. Being on a steep slope, erosion can also be a serious problem unless there is significant vegetation cover.



Figure 4. Wooded slope.



Figure 5. Thermal spring.

² Conversation with Hank Art, May 10, 2005.

³ Soils information from Scanu, Richard J. 1987. *Soil Survey of Berkshire County, Massachusetts*. Washington, DC: Soil Conservation Service.



Figure 6. Map of Wire Bridge Farm wetlands (in magenta). Courtesy of Laura Cavin and Addie Robinson.



Figure 7. Fen at Wire Bridge Farm.

A tepid thermal spring sits at the bottom of Northwest Hill, helping to make this property distinctive (see Figure 5). This spring is one of only two of its type known to exist in Massachusetts and is thought to be the northernmost thermal spring in the Appalachians.⁴ The warm, mineral-rich waters emerging from underneath Northwest Hill flow out of the spring and feed into a series of calcareous fens that occupy several acres along the base of the slope (see Figures 6 and 7). Fens are rare ecological wetland features that are known for harboring extremely diverse biota, which may include rare species of special concern. While no listed species have been found in or near the fens thus far, an extensive survey has yet to be carried out. A preliminary species list can be found in Appendix A. A small stream flows out of the fens and runs along the base of Northwest Hill to the north border of the property (see Figure 8).



Figure 8. Stream from tepid spring.

⁴ Presentation by Drew Jones, February 22, 2005.



Figure 9. Hayed portion of the field.



Figure 10. Corn silage portion of the field.

A broad terrace extends from the base of the slope to the edge of the Hoosic River (see Figure 9). While most of this area is a hayfield, approximately one third of the field is currently being farmed for corn (see Figure 10). Most of the cornfield, however, lies in the northern parcel, and only a few acres fall in the area currently owned by the College. Parts of the field lie in the 100-year floodplain of the Hoosic; this is one of largest stretches of undeveloped floodplain in the region. The soils of this bottomland are ideal for supporting crops and woodlands, with Merrimack sandy loam and Copake fine sandy loam forming most of the field (see Figure 5).⁵ These loams are deep, “somewhat excessively drained,” and either level or slightly sloping. Because of the fast drainage, any contaminants released on top of the loams can percolate into the groundwater without being filtered out. The fine quality of the Copake loam also puts it at risk for erosion. The northwest part of the field at the base of the hill is made up of Hero loam. While deep and well-drained, this soil’s moisture is highly dependent on the level of the water table. Building on such soil, therefore, is ill-advised.

Just before one reaches the Hoosic River, she will encounter a rich bottomland riparian forest along the river’s edge (see Figure 11). The Hadley silt loam along the river is ideal for the

⁵ Scanu 1987



Figure 11. Riparian forest and Hoosic River.

cottonwood, basswood, ash, elm, and black maple trees found growing there. This riparian forest adds to the biological and geological diversity of this unique parcel of land.

SITE HISTORY

The history of the Wire Bridge Farm parcel is more than interesting: it informs our planning process because it determines the social, legal, and ecological parameters in which we will work. The parcel and its surroundings were owned before 1972 by Preston Robinson of Sprague Electric fame. From whom he purchased the land and to what extent he himself employed it we do not know. A pipe in the tepid spring, the remnant basement of a house that burned in 1975, and the buttresses of the old wire bridge for which the lot was named are the remaining evidence of previous inhabitation. The parcel's address, "Off Simonds Road, Williamstown, MA 01267," recognizes the bridge as the primary point of access to the land even though it no longer exists.

As seen on the lower loop of the HMF trail, a land's history influences the type and pattern of vegetation that grows in an abandoned field. The hedgerows around the current silage corn fields are indicative of the past use of the area. The field was farmed for many decades by Harry Beals and more recently by Joel Burrington. The majority of the field has been dedicated to hay and silage corn production; some livestock also grazed there until the late 1970s.⁶ The silage corn fields were heavily fertilized and limed. Much of the steep and rocky wooded slope was logged in the 1970s, although some parts appear to have been left uncut.⁷

The site's history informs the social climate as well. Although the community outside of Williams College is not the priority group of the Committee, it is easier and politically better for the College and in line with the mission of HMF to provide for outside users where their interests are compatible with the College's priorities. In this regard it is pertinent history that horse riders, especially from the DeMayo's Bonnie Lea Farm, have long made use of the Hoosic River Trail

⁶ Interview with John Tietgens, April 23, 2005

⁷ Conversation with Hank Art, May 10, 2005

(with and without permission of HMF) to get to the open fields of Wire Bridge Farm where they have traditionally been welcome. This issue has been contentious for many years, and HMF can expect resistance from horse riders if the Committee determines that horseback riding is incompatible with the goals of HMF generally or the new parcel specifically.

Finally, Joel Burrington, who has been farming the land for the past eight years, would like to continue farming this parcel. We have the right to terminate his farming contract with one year's notice, and the Committee will not make a decision strictly for his benefit, but his history with the land nonetheless makes his opinions relevant to us.

Since the College purchased the property, it has been used for small-scale research and monitoring projects by David Dethier, Jay Racela, and their students.

COMMUNITY RESEARCH

Drew Jones – HMF Manager – March 9, April 13, and May 13, 2005

Our first interview with Drew was more of an information session where he gave us an overview of the Wire Bridge Farm parcel. He told us about the limited history of the land, its purchase by John Tietgens, the deed, the conditions of the rights-of-way, and the Tietgens' hunting rights. He discussed the terms of the purchase of the land, the surrounding properties, and the current uses of the land. He told us of the biologists' interest in having successional plots, the problem of invasive species, and the problems of horses.

Throughout our conversation, he directed us toward several people to contact, including: Brian Koczela, the deed surveyor; John Tietgens, the previous owner of the land; Joel Burrington, the current farmer of the land; Cappy Hill, the Provost; Pam Weatherbee, a local botanist; and the entire Committee. Overall, he noted the importance of following the HMF Mission Statement in our planning.

Our other conversations with Drew were mainly to receive feedback on our progress and to clarify details that were unresolved.

HMF Users Committee – March 10, 2005

We met with the Committee to obtain an overview of its expectations and goals for the project. Its members mainly reviewed the characteristics of the parcel and what projects were currently underway. We were informed that temperature monitors had been placed in the spring and that two students (Laura Cavin and Addie Robinson) had performed GIS mapping of the site in 2004. The property may also have significant historical value and David Dethier speculated that Native American or colonial artifacts may be present on the land. The Committee's biologists mentioned a desire to establish successional plots on the parcel, but did not provide

details of what that would entail. Some Committee members liked the idea of a footbridge or road bridge across the Hoosic River from Steinerfilm and suggested we investigate that possibility. Scott Lewis emphasized his desire for recreation on the site in the form of trails or a canoe landing. The Committee also offered general suggestions of ideas to consider and possible tasks to undertake while working on the project: take more detailed physical measurements, talk to an historian regarding the historical value of the site, perform or recommend a biological inventory of the parcel, look at the HMF use policies, talk to neighbors of Wire Bridge Farm, and look at how our proposed uses fit in with the Williamstown Open Space and Recreation Plan.

Student Focus Groups – March 17 and 18, and April 7, 2005

We conducted three focus group sessions with Williams College students in mid-March and early April to gauge student opinion of how the Wire Bridge Farm parcel should be used. We emailed over sixty students we knew used HMF (runners, researchers, caretakers, etc.) to invite them to the sessions, and we also posted notices to the student Daily Messages and CES email listserv. About six students attended each of our three sessions.

Those attending displayed an overwhelming desire for some sort of agriculture on the parcel, ranging from a large garden to a study away farm program similar to the Williams-Mystic program. The general consensus, however, was that the activity should be larger than a garden and smaller than a farm, and should utilize sustainable or organic farming to teach students about such processes. Farming the land would keep with the character and history of Williamstown and could open the door for future courses on sustainable development or agroecology.

Recreation was the other use that dominated focus group discussion. Specifically, students wanted trails built around the property, as well as through the property from the Hoosic River Trail to the part of HMF to the northwest of the parcel and continuing on to Northwest Hill

Road and the Upper Loop Trail. Students indicated that they would like to use these trails for hiking, running, and cross country skiing. These trails would be desirable due to their relatively flat topography, their open surroundings, and their proximity to the river, characteristics that are not found elsewhere in HMF. Support was also offered for a cabin, lean-to, or low-impact campsite on part of the property. Other recreational amenities proposed included a canoe landing, boathouse, fly fishing center, or a ropes course.

Students expressed strong reservations to using the land for serious, long-term research. They worried that very few students would be involved and that none would see the results of their work. A better research-based use would involve smaller, short-term projects that could be incorporated into classes or independent research. Some students also suggested using the land for Williams students to teach environmental education classes to the general public or to elementary school students.

Everyone in the groups was strongly opposed to building a road bridge to the property across the Hoosic River. They saw no practical need for it. Most were enthusiastic about a footbridge, arguing that it would greatly increase access for students and allow the parcel to be better used. Some students remained unconvinced that the footbridge would be used enough to warrant the cost.

Ken Brown – Student – April 6, 2005

We talked to Ken Brown, president of the Williams Outing Club and student member of the Committee regarding his views on the Wire Bridge Farm parcel. He expressed some reservations about the plot system and thought that the parcel's characteristics may be too variable for such a large, controlled experiment. He suggested that the HMF plot just to the northwest of the Wire Bridge Farm parcel may be better suited to such a study. In an ideal

world, Ken would like the parcel to be used for some sort of “agricultural activity,” preferably small-scale organic farming. This could be incorporated into the educational mission of the College through experimentation and courses on sustainable agriculture. He also thought a footbridge would expand the use value of the property for the College and the public. This would be complementary to a system of trails on the property. Ken did, however, caution that any sort of recreational structure, such as a lean-to, would need to be patrolled to make sure “it’s not used for the wrong reasons.” A better alternative would be designated low-impact camp sites.

David Dethier – Geology Professor – April 11, 2005

David Dethier, the chair of the Committee, stated that he would like to see the boundaries of the fens marked and the trails cleared of invasive species. He is interested in monitoring the temperature and discharge of the tepid spring, its water chemistry, and the carbonate precipitates. Other interests include digging a trench through the field and perpendicular to the river to study the sediment and investigating the archeological properties of the sediment. Prof. Dethier also mentioned that Ronadh Cox and Heather Stoll (geoscience professors) might also be interested in studying various aspects of the fen and river and low terraces. If classes were to be able to use the parcel for labs, a footbridge or other quicker access would need to be developed.

Prof. Dethier stated that he would like to see the field kept open for its aesthetic and ecological value. Recreation should also be included in a use plan if at all possible.

Jay Racela – Environmental Lab Technician – April 12, 2005

Jay Racela, a member of the Committee, suggested that the field area be used for agroecology research. He thought a course in sustainable agriculture would be interesting, and that the Luce Foundation Grant could be a potential source of funding for this type of course.

He also mentioned the importance and relevance of incorporating current research into the plan for the site. Monitoring of the temperature of the spring is already being done and will certainly continue. He said that many small research opportunities are available throughout the plot including botanical and zoological studies of the fen, bacterial studies in the thermal spring, and various studies of the Hoosic River.

Other things he showed interest in were educational signs, trail work on the northern access road, a footbridge over the Hoosic, management of the invasive species near the fen, improvements to the trail to the spring, and unique recreational uses of the site.

Joan Edwards, Manuel Morales, & David Smith – Biology Professors – April 15, 2005

We gathered these three Committee members for a joint interview because we were under the impression that they had similar ideas for the Wire Bridge Farm parcel. They presented us with essentially three possible research plans: long-term forest successional plots, short-term early successional plots, and long-term experimentally modified successional plots. The first two studies are similar to those carried out on a much larger scale at research universities. The third option would be the most original, but would also require somewhere between “a lot” (D. Smith) and “a WHOLE lot” (M. Morales) of work to set up. Ideally, plot size would be at least one hectare with three to five replicates being run.

None of the professors stated that they were particularly committed to making these projects the focus of their research, but rather indicated that they would be a joint side project.

Further, providing such research land that is not at risk of being disturbed could attract new, quality faculty who are interested in performing research on the land. David Smith stressed that having quality faculty research creates a cascade effect for student research opportunities. In order for the land to be used by classes, however, he stated that quicker access would be necessary.

Helen Ouellette – Vice President and Treasurer – April 15, 2005

Dr. Ouellette explained some of the reasoning behind the purchasing of the land. It is adjacent to current college property, CES had funds available, they were able to buy the parcel in separate pieces, making acquisition easier, the land has many unique properties, and the land is already cleared so as to facilitate the start of research experiments. She sees it as an integrated part of HMF.

When asked how she would like to see the land used, she said the forest is primarily a resource for education and research. If recreation were to come in conflict with these uses in any way, education would clearly take precedence over the conflicting uses.

She also directed us toward the attorney Don Dubendorf in order to get answers about our concerns over the rights of way found in the deed. Being a good neighbor is an important concern of the College.

Scott Lewis – Outing Club Director – April 19, 2005

Scott Lewis, a Committee member, expressed several visions for recreational use of the site, including: building camouflage shelters, or blinds, near the river edge and at the wooded edge near the fen for wildlife viewing; building a canoe landing near the abutment of the old wire bridge for a place to rest along the river; a small picnic area; and the addition of a trail

around the field and possibly up the wooded slope to Northwest Hill Road. He would also like to know about the fishing policy at that point along the Hoosic.

He noted that the trails would be ideal for cross country skiing and running. When developing trails, he said we have to consider use of the trail. Heavy horse use would require a new level of trail maintenance that would bring costs up. Also, use by mountain or motor bikers would heavily affect the trail.

In regards to building a footbridge, he said that this would encourage unwelcome activity and would thus require some monitoring. Along with this, he strongly discourages building a camping structure because of the negative side effects that come with heavy camping use. He noted that if anything ends up being built, the Committee will need to determine who is in charge of monitoring and maintaining the built structures.

Scott hopes the field will remain open because it is a different setting from the rest of the forest and it keeps the river-field and field-forest edges open for observation. He would be more interested in student research than long-term professor research.

Don Dubendorf – Williams College Property Lawyer – April 22, 2005

We consulted with Don Dubendorf primarily about rights and limitations associated with the two right of ways deeded to the college. It was through him that we learned the general legal framework within which lawyers determine the appropriate use of a right of way under dispute. Firstly the dominant estate (in this case Williams College, because it holds an easement over land of a subservient estate) has right to travel on the right of way only *to gain access* to the parcel, but not to recreate, loiter or park on the right of way itself. Secondly the language used in the deed describing the intention of the right of way is final and takes precedence over all other information. Thirdly, when language is unclear or ambiguous, lawyers try to determine the

original intent via conversation with original parties, inspection of past actions, sketches, etc. Fourth, he introduced the concept of burdening a right of way by overuse of even a permitted type of access—two trucks passing each week might be permitted while 15 might not. This is a greyer area, and can involve lengthy litigation. Finally, he emphasized that the College must think outside the narrow legal terms of the right of way, both because these terms can be renegotiated and officially changed in the deed and because even legal use may be discouraged by the College administration if it is seen to bully or overly upset neighbors.

The final non-legal advice he gave us was to think big, to develop alternatives without thinking of the limitations – to know our limitations without treating them as “a straight jacket”.

Manuel Morales – Biology Professor – April 27, 2005

We decided to meet with Manuel separately to clarify some of the details of his research ideas that we were not fully set out during the joint meeting on April 15 with Profs. Edwards and Smith. Manuel said he would like to do research on old field succession in the field section of the Wire Bridge Farm parcel. This research would be a side interest for Manuel; it would allow him to add a new dimension (age of the field) to his primary research into insect mutualism.

Manuel’s research plan would require nine plots of one hectare each. This would allow him to have three ages/treatment groups with three replicates of each. Every four years he would cut back the vegetation in one set of plots, giving him a twelve-year maximum age. Before beginning the treatments in this research, he would till the entire field and let it grow (mowing occasionally) for five years in order to minimize the effects of the current land uses. Thus, it would take close to twenty years before the full successional array would be established. Manuel pointed out that one attractive feature of this research plan is its low costs (both startup and maintenance).

Manuel's hectare plots would be subdivided into several sections; some of these would be available for students (either independently or in classes/labs) to design and run experiments. However, these experiments would have to be in line with Manuel's general research goals, so the possibilities would be somewhat limited. Manuel also felt that some recreation on the site would be fine in terms of compatibility with his research. A trail around the perimeter of the field, for example, would be acceptable, as would the canoe landing and nature blinds, as long as visitors were respectful of the research area and generally did not intrude into the plots. Camping, however, would not be compatible, nor would a connector trail, as these options have the potential to bring heavier traffic to the area, and this could be detrimental to the research plots.

Manuel identified several important factors that we should consider. These included the potential for outside funding, which he thinks is high for this research setup; the funding stream that is likely to exist twenty years down the road; and the assignment of responsibility for maintenance and management of the parcel.

Dining Services – Bob Volpi, Director; Mark Petrino, Associate Director; Ginny Skorupski, Nutritionist – May 2, 2005

We went to Dining Services because we heard of their potential interest in establishing a school-run agricultural or composting facility. Initially, when asked about a farm, they talked about crops the school could grow that had longer growing seasons and that would not be in competition with other local farmers, specifically Bill Stinson. Ginny mentioned rhubarb and asparagus as two possible crops. Ginny also said that these are not high demand items so they would not provide the school with any financial benefit. They then went on to talk about building a hoop house or greenhouse where a high demand item like spinach could be grown and

supplied to the college. Yet, when asked to consider the financial feasibility of establishing a college farm of any kind, all three members quickly said that it is not within the budget of Dining Services. No one on their staff could take on the role of a farmer, so a new permanent position would have to be hired. This is not something that Dining Services could even consider because they have no additional room in their budget. Bob noted that Dining Services is always interested in purchasing locally-grown food but cannot itself be the producer.

That is when they got to talking about composting. Now Williams spends between \$20,000 and \$24,000 a year on composting. About \$3000 of that goes to paying for the storage bin in which compost is kept on College grounds. The remaining money goes to paying someone to collect and transport the compost to a facility, which is currently Holiday Farm in Dalton, Massachusetts, a town 25 miles south of Williamstown. As this farm is an unpredictable acceptor of the College's compost, Dining Services is interested in having a reliable composting facility. If the maintenance costs of a school composting facility could be incorporated with the salary of the compost collector and if the startup costs could be supplied by another source, then it could be feasible to have a composting site at the Wire Bridge Farm parcel. However, costs outside their current budget would have to come from other sources. Additionally, Dining Services said that bringing composting closer to home would give it more educational value to the students. A school composting facility could be used to directly show the College's interest in sustainable dining.

Cappy Hill – Provost – May 2, 2005

Cappy Hill told us that CES has several endowments that can be used to purchase the final third of the parcel. In addition, she said that the department(s) that make primary use of the land could likely fund the development of any necessary infrastructure, or could request

additional funds from the College. Although it would be difficult to obtain additional funding from the general College coffers to finance additional projects carried out by existing faculty, the College does have funding that is dedicated to the development of research projects by new faculty members.

Dr. Hill's vision for the Wire Bridge Farm parcel is one of non-exclusionary multiple use. In particular, she would like to see the parcel and its trails open for general community use. If the parcel is to be used for research that would exclude recreational use, Dr. Hill feels that the value of that research must be high enough to balance out the opportunity costs of this exclusion. Regarding the suggestion that the parcel might be used for research by a future faculty member, Dr. Hill stated that the entire Biology department would have to unanimously agree that they want a faculty member with that specific research interest; she thought that this would be unlikely.

Dr. Hill informed us that as she sees it, farming is not core to the College's mission, so it would be difficult to justify expenditures for agricultural uses of the parcel. Furthermore, there is currently a general freeze on hiring new staff at the College; this makes projects requiring a staff person even less feasible.

LAW AND POLICY OVERVIEW

As we develop use options based on our community research, we must consider legal and regulatory framework within which we must operate. Most of the applicable legal regulations are in place to protect natural characteristics of the land (the rivers, wetlands, and rare animals), to regulate construction, or to maintain deeded agreements between the buyers and sellers of the Wire Bridge Farm parcel.

Environmental Law and Policy

Wetlands

The two fens in the property (one in the currently owned parcel, one in the option parcel) both constitute regulated wetlands, and would be subject to protection under the Massachusetts Wetland and Rivers Protection Acts.⁸ The zone of protection includes a 100-foot buffer surrounding each fen, in addition to the fens themselves. The locations of the fens can be seen in Figure 6. While the fens are essentially off-limits to any sort of modification, the inner 50 feet of the buffer allows for minor activities that will not disturb the wetland, while slightly more significant actions can be undertaken in the outer 50 feet of the buffer. Activities designated as “exempt minor activities” within the buffer zone that are pertinent to our proposed land uses include:⁹

- unpaved pedestrian walkways for private use
- fencing that does not form a barrier to wildlife
- vista pruning in the outer 50-foot buffer
- plantings of native trees and shrubs
- mowing of lawns

⁸ Interview with Hank Art, March 10, 2005

⁹ 310 CMR 10.58 (6) (b)

Carrying out any of these activities will still require a filing of a Request for Determination of Applicability (RDA) to the Williamstown Conservation Commission. The Commission, however, is likely to approve said uses for the parcel.¹⁰

Riverfront Area and Riparian Zones

The field portion of the Wire Bridge Farm parcel is bordered on the east, southeast and west by rivers whose banks are protected under the Massachusetts Wetlands and Rivers Protection Acts (M.G.L. c. 131, § 40) as defined and clarified in 310 CMR 10.58. Both meet the legal definition put forth in 310 CMR 10.58: “a natural flowing body of water that empties to any ocean, lake, pond, or other river and which flows throughout the year”. Because the westerly “river” is fed by a year round spring and empties into the Hoosic in Vermont, its banks are protected in the same way as are those of the Hoosic.

The riverfront area (see Figure 12) is the area of land between a river’s mean annual high-water line measured horizontally outward (through terrain, not land surface) from the river and a parallel line located 200 feet away.¹¹ This can be separated into the inner and outer riparian zones of 100 feet each, which are protected somewhat differently. Notably, the parallel line is located 100 (not 200) feet away for *new* agricultural and aquacultural activities.



Figure 12. Riparian zones.

The same minor activities that are exempted in wetlands buffers are also exempted within the riparian zone. Most of the activities proposed

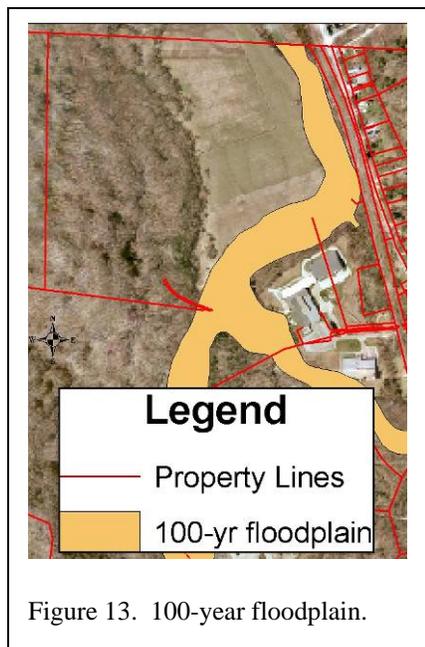
¹⁰ Interview with Hank Art, Mach 10, 2005

¹¹ 310 CMR 10.58 (2)(a)

in our alternatives are either already exempt or could be shown to have no significant adverse impact and be necessarily placed in the riverfront area, and are therefore likely to be approved by the Conservation Commission.¹²

100 year Flood Plain

The boundary of “Bordering Land Subject to Flooding” is the estimated maximum lateral extent of the flood water which will theoretically result from the statistical 100-year frequency storm (310 CMR 10.57 (2)(a)) (see Figure 13). Again, the commission will presume the bordering land subject to flooding (hereafter “floodplain”) to be significant for flood control and storm damage protection and protection of wildlife habitat especially vernal pools within the flood plain.¹³



Proposed work within the 100 year flood plain must meet certain performance standards. Loss of flood storage volume (from bridge construction, road improvements, etc.) must be compensated for in the nearby vicinity. Construction of a canoe launch must not restrict flow. Construction in areas found to be significant to the protection of wildlife habitat must not impair the areas’ capacity to provide important wildlife habitat functions.

Rare Species

Rare species in Massachusetts are listed as Endangered, Threatened, or Species of Special Concern by the Massachusetts Natural Heritage & Endangered Species Program (NHESP) for

¹² *Ibid.*

¹³ 310 CMR 10.57 (1)(a) and (b)

protection in the state. The main regulation covering such listed species prohibits any “taking” of the species, including killing, collecting, or disrupting of the plant or animal.¹⁴ NHESP lists Williamstown as having 18 endangered species, 13 threatened species, and 17 species of special concern within its boundaries (Appendix B).

While the fens on the parcel have been suggested as possible locations of rare species protected by the Massachusetts Endangered Species Act,¹⁵ a comprehensive study of their flora and fauna has not been conducted. We recommend that the Committee carry out such a study both to determine the legal feasibility of altering the habitat for potential projects and for educational value of any species present.

The Massachusetts NHESP has delineated “Estimated Habitats of Rare Habitat” for all towns in Massachusetts under state Wetlands Protection Act regulations. The area bordering the Hoosic River in our parcel is included in this estimate. In addition to suggesting a need to look closely for rare species in this area before making modifications, the designation also requires that any applications to the Conservation Commission for alteration of the area also be submitted to the NHESP for approval. As for the wetlands, we do not recommend attempting to alter habitat of any rare species found unless absolutely necessary. Rather, these species should be observed for their educational value to students and the public.

Legal Constraints

Road Improvements or Construction

The existing road from Northwest Hill Road (see Figure 14) is not a public right of way because: 1) a special grant to use it was included in the deed, and 2) it in no way meets the standards laid out in the coding. More likely it will be considered a personal driveway, subject

¹⁴ M.G.L. c. 131A

¹⁵ Interview with Drew Jones, March 9, 2005

to laws regarding adjacent wetlands and natural resources and requiring a permit from the town building inspector.

Zoning

The parcel is currently zoned as Rural Residential 2. Educational uses of land, however, are exempted from zoning regulations. The land can thus be used for any of the proposed uses without receiving approval from the Williamstown Planning Board or

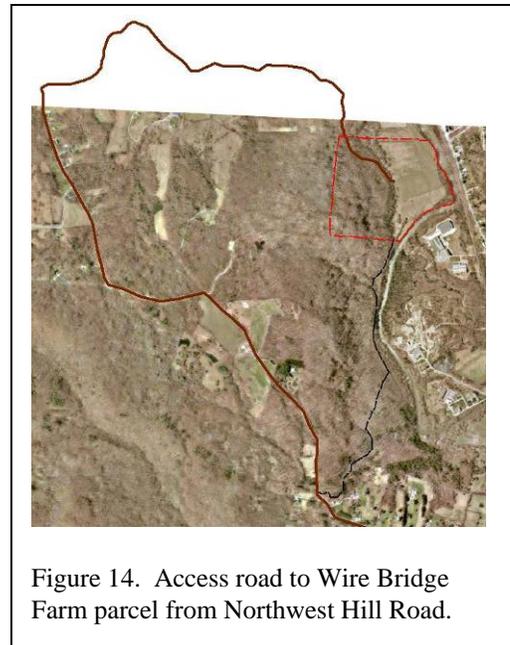


Figure 14. Access road to Wire Bridge Farm parcel from Northwest Hill Road.

Zoning Board of Appeals. The land is, however, subject to dimensional zoning requirements and lacks sufficient frontage for construction of any residential or commercial structures.¹⁶

Legal Issues from the Deed

Tietgens Hunting

John C. and Ellen G. Tietgens and their children are granted the right to hunt on the parcel for the remainder of their lives, but this right cannot be passed on to or shared with others. This is unlikely to carry much weight in the planning process, but should be kept in mind to prevent any potential conflicts.

Rights of Way

Along with the title to the Wire Bridge Farm parcel, the College was deeded two rights of way by which access to the parcel can be gained. On the eastern side of the plot, where the abutment of the old wire bridge is still standing (see Figure 15), we have a deeded right to build a

¹⁶ Interview with Don Dubendorf, April 22, 2005

bridge and access Route 7 via the old road (as used on or around June 13, 1972 by Preston Robinson) through the Steinerfilm parcel and under the railroad overpass. This road is visible in a 1972 aerial photograph (see Figure 16). The sketch accompanying the deed transferring land from Shavaun Towers to Steinerfilm, however, makes it appear as though the right of way follows the Hoosic River to Route 7 (see Figure 17).

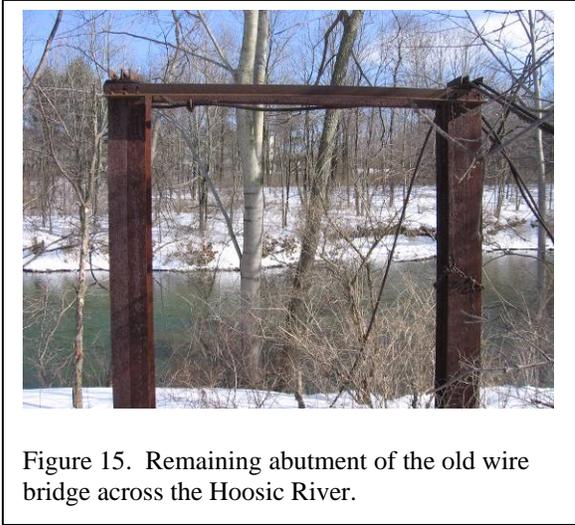


Figure 15. Remaining abutment of the old wire bridge across the Hoosic River.

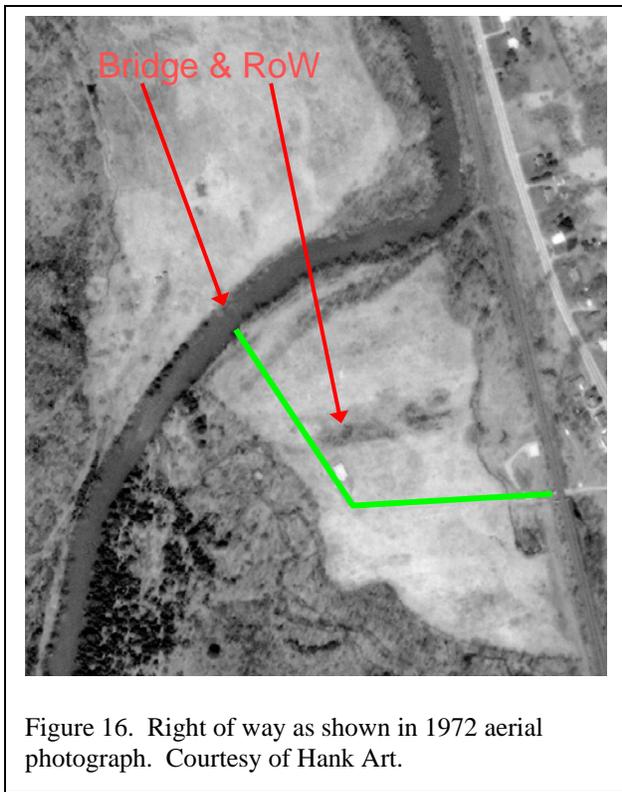


Figure 16. Right of way as shown in 1972 aerial photograph. Courtesy of Hank Art.

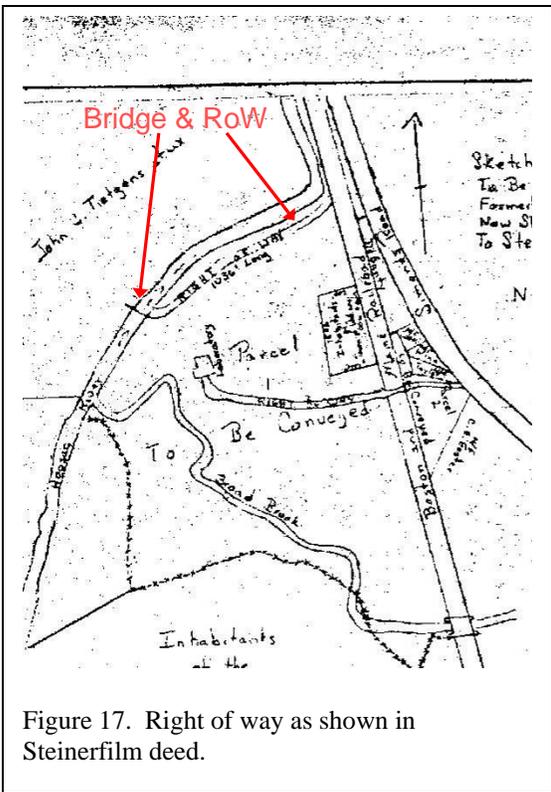


Figure 17. Right of way as shown in Steinerfilm deed.

ALTERNATIVES

Based on our community research, we developed several alternatives for the use of the Wire Bridge Farm parcel. We will first discuss the options for access and recreation that apply to all of the use alternatives. We will then present suggestions for the wooded slope. Lastly, we will describe options for the use of the field portion of the parcel.

Access Alternatives

Current access to the parcel is by foot trail from the south or a poor quality dirt road from the northwest. Hiking to the Wire Bridge Farm from the Rosenburg Center takes approximately 30-40 minutes, while driving from the Williams campus takes 25-30 minutes. Many of our proposed uses would require improved access to the site. Several alternatives exist, which are described here.

Trail Access

The Hoosic River Trail is not well-used and is overgrown in places. This makes ticks a notable problem on the trail. There is no need to make major changes to the trail, but a crew should work to better maintain it and make it more easily passable. According to Hank Art, a population of crooked-stem aster (a Massachusetts state threatened species) resides along the current trail. He suggested that CES may want to reroute the trail away from the aster if it will receive more traffic. We support this suggestion in the interest of preserving the species, as rerouting the trail slightly would not be very costly. Many students stated that they did not even know the trail existed, and many who had heard of it did not know where to find it. While some of our uses seek to discourage recreational access to the parcel, others seek to increase foot

traffic on the Hoosic River Trail. For these uses, we recommend that the trail be better marked on maps and that HMF install signs directing hikers and cross country skiers to the trailhead.

Under the recreation section we will detail a connector trail that runs from the Carriage Road Trail across Northwest Hill Road and down the wooded slope to Wire Bridge Farm. This trail would be about the same length as the Hoosic Trail route and would provide quicker access to the top of the wooded slope. The Committee should consider constructing a small parking area at the intersection of the trail and Northwest Hill Road for lab vans and others interested in accessing the parcel. The Committee must also bear in mind that such a parking area would increase the overall visitor traffic to the parcel which may not be compatible with the land's uses.

Existing Road

The current road passes through Valley View Farm and other adjacent properties from Northwest Hill Road and runs down Northwest Hill to our property. It passes immediately between the house and barn of Valley View Farm (see Figure 18). Options for rerouting are possible, particularly a few hundred feet downslope and parallel to the existing road. This would need to be negotiated with the landowner. The College possesses a deeded right of way over the



Figure 18. Access road passing between Valley View Farm buildings.

road through the other properties that allows use for non-commercial farming and basic access to the parcel. This would need to be renegotiated before the road could be rerouted. It is unclear who is currently responsible for maintenance of the entire right of way, although John Tietgens has been performing the task. Some aspects of

our proposed land uses fall outside the deeded uses of the right of way, and these would need to be discussed and possibly negotiated with the affected landowners.

Improving the road for the accepted uses, however, is completely legal. The College can regrade the road so long as the impacts of the action do not fall outside the 20-foot wide right of way. Any proposed actions should, of course, be discussed with the affected landowners first.

Some parts of the road on the Wire Bridge Farm parcel run through wetland and riparian buffer zones. Therefore, any work on these sections would need to be approved by the Conservation Commission through filing a Notice of Intent. Otherwise, the road is a private drive and not subject to Williamstown road regulations.

We talked to Marc Bottesi who owns a construction company that paves and grades roads, among other projects. Based on the specifications of our current road he estimated it would cost approximately \$40,000 to grade the road with gravel with an additional \$12,000 annual maintenance cost, and \$135,000 to pave the road with asphalt with smaller maintenance costs.¹⁷ Paving would likely have a more significant impact on surrounding wetlands and the Valley View land than a gravel road, and would likely be opposed by the Valley View landowners. They had previously indicated that they only wanted the road used for agricultural purposes and would likely fear that a paved road would mean more traffic.

Footbridge

Our right of way across the Hoosic River in the southeast and through the Steinerfilm property requires the construction of a bridge in order to use any part of the right of way. Specifically, the deeded right of way allows the College to access Simonds Road from the parcel. Driving to the base of a footbridge across the Hoosic River, parking, and then walking across is

¹⁷ Interview and site visit with Marc Bottesi, private contractor, May 4, 2005.

not permitted by the College's current arrangement. This is not to say that the deed cannot be renegotiated with Steinerfilm to allow such access. Based on personal experience on the property and our conversations with Don Dubendorf (the College's property lawyer and former lawyer for Steinerfilm), it appears highly unlikely that Steinerfilm would want to allow anyone access to their property through a right of way. A footbridge, therefore, would be nearly impossible to build based simply on the College's right of way.

Assuming that the right of way issue was cleared up, a footbridge would still require filing a Notice of Intent with the Conservation Commission for alterations of the riverbank and riparian zones, approval of design from the Williamstown building inspector, and approval from the Army Corps of Engineers as the bridge would cross a navigable river. According to Tim Kaiser at Williamstown Public Works, a footbridge over the Hoosic River would cost in the range of \$100,000-\$500,000.¹⁸ However, Scott Lewis mentioned that construction of a footbridge could be completed for substantially less money. A footbridge, if feasible, would be a really, really sweet form of access to the parcel, as would a zip line.

Road Bridge

A road bridge across the Hoosic River leading to a road over the College's right of way through Steinerfilm would remedy the issue of only using the right of way to access Simonds Road. While access along this path would be legal under the deed, it would not necessarily be politically feasible. As stated earlier, Steinerfilm does not want outsiders crossing their property at all. Whether or not they could stop or stall this access through legal action, the company would still likely enter into a significant conflict with the College. Helen Ouellette (vice president and treasurer of Williams) signaled that the College wants to be a good neighbor and is

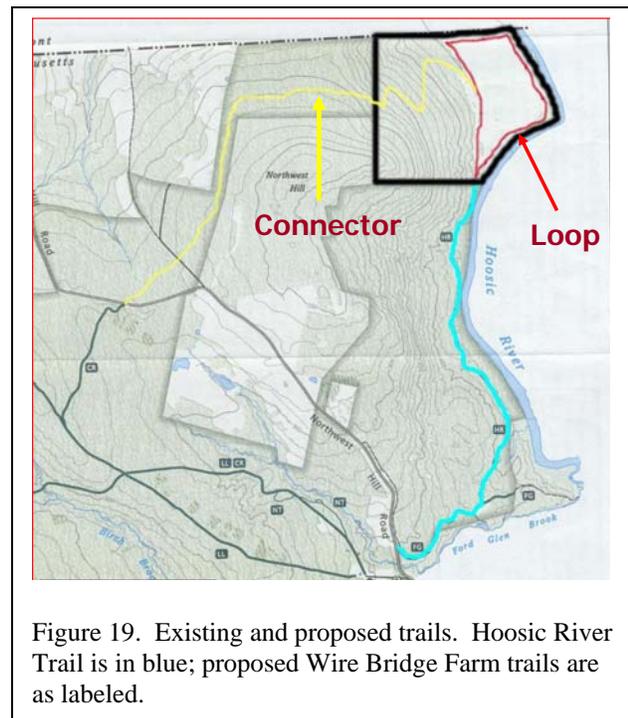
¹⁸ Telephone interview with Tim Kaiser, April 20, 2005

unlikely to fight any resistance by Steinerfilm. A road bridge, therefore, is nearly as impossible to build as a footbridge.

A road bridge would also be subject to the same regulations as a footbridge, as stated above. Additionally, the cost would be immensely higher than that of a footbridge, making it even less feasible. Tim Kaiser said there are too many variables to factor in to put forth a preliminary estimate of the actual cost, but noted that it would be much higher than that of a footbridge.

Recreation Alternatives

One possibility for recreation is an improved trail system that borders the edge of the field by the river and along the wooded edge (see Figure 19). This trail would be easy to establish, as it follows a pre-defined edge. The only maintenance it would require would be periodic mowing, which is something that could be added to the general maintenance scheme for HMF.¹⁹ It would also be feasible to have a



trail that leaves from the field, up the wooded slope, through college-owned land to Northwest Hill Road. If old logging roads were followed to the greatest extent possible, establishment of this trail would not be difficult. Also, once the trail overcomes the steep slope that is part of the Wire Bridge Farm parcel, the trail would mostly follow the natural contours of the land and

¹⁹ Interview with Drew Jones, May 13, 2005

would make for a reasonably flat trail. The cost of construction of a trail such as this would be minimal (approximately \$1500) and could potentially come through HMF funds.²⁰ Building this trail would divert runner traffic from the property's northern right-of-way, alleviating the potential problem of runners disturbing Valley View Farm.

Interpretive signage and trail development could get expensive, depending on its level of intricacy. The signs could go along a trail, pointing out interesting environmental features along the way. The project of designing or establishing signage could be a candidate for a Williams student summer project. Before putting interpretive signage in place, the Committee would have to decide if use of the parcel warrants such an expenditure.²¹

As far as use of the trail, considerations would have to be made as to whether or not horses would be strictly prohibited from the trail. Use by horses would add significantly to the maintenance costs of the trails. Maintenance of the trail would be minimal if use were limited to runners and hikers in the spring, summer, and fall, and cross country skiers in the winter.

Other compatible recreational uses for this area include nature blinds, a canoe landing, a picnic area, and a low-impact campsite. Wildlife viewing blinds could be set up along the edges, specifically where the field meets the river and where the woods meet the field (at the fens especially). These would also be reasonably inexpensive to build, approximately \$1500²² and would offer a way to take advantage of the unique natural characteristics of the land. The canoe landing would be more expensive but would provide a valuable recreational opportunity. The Hoosic River Watershed Association (HooRWA) has expressed interest in making Wire Bridge Farm a recreational destination for river users.²³ The landing could be located either near the

²⁰ Interviews with Scott Lewis, April 19, 2005 and Drew Jones, May 13, 2005

²¹ Interview with David Dethier, April 11, 2005

²² Interview with Scott Lewis, April 19, 2005

²³ Conversation with Eileen Fielding, May 19, 2005

southern right-of-way or the center of the property. Having it near the old wire bridge means that it would be near the proposed campsite, so the recreation areas would be kept together. However, the bank of the Hoosic River is most shallow near the center of the field. If the canoe landing were placed here, it would require much less alteration of the bank but would also be separated from the camping area. The altering of the bank would be the most significant cost of this project and would require approval by the Conservation Commission. If the Committee decides to approve a canoe landing, it will have to decide which location is the most practical and feasible for the purposes of the field. As for a picnic site, a table could be easily and cheaply constructed.

The campsite would not involve construction of any structures, but simply designation as an appropriate low-impact camping area. This area would be large enough for three to four tents. It would be at the southern edge of the field, close to Steinerfilm but well-removed from the road. A small fire pit might also be established, and a pit toilet could be dug if necessary. Although this option does not align with the current HMF Use Policy, the area as proposed would not receive heavy use. It is accessible only by foot, and advertisement of the camping area would be minimal so as to prevent unwanted visitors. In addition, this area is not part of the existing permanent plot system.

Use of the Wooded Slope

While about half of the Wire Bridge Farm property is wooded slope, we focused the majority of our research on the field portion because it is a unique habitat within HMF. In addition, the field is the part of the parcel with conflicting use options. However, the wooded slope does deserve some recognition. Through Hank Art, we have learned that the slope contains a beautiful and impressive stand of wildflowers as well as a variety of interesting trees,

including shagbark hickory.²⁴ It also contains rock outcroppings for potential geological study. While the steepness of the slope makes it difficult to ascend, it could make for a challenging part of a connector trail (as noted in the recreation alternatives). In addition, the presence of old logging roads on the slope makes for reasonable access and mobility on the slope. It is recommended, then, that biology and geology professors take advantage of this slope and utilize it for their own research and/or classes. Consideration may also be made for the extension of the HMF permanent plot system to this area. However, this action should not be taken until a land use plan for the site has been developed.

Land Use Alternatives

Alternative One: Status Quo

This alternative would either stop all activities and leave the field undisturbed or allow Joel Burrington to continue his agricultural operations on the site. The benefits of the status quo alternative are mainly in terms of expense, as it will not cost anything. Also, the field will be kept open and will retain its agricultural character if Burrington continues to farm it; many interviewees have expressed interest in this value. The costs of this option are a lack of research and educational opportunities – while these activities are not explicitly precluded, they are limited to observational data collection rather than manipulative experiments. In addition, access to the parcel is not sufficient to bring classes or labs there; this severely limits the educational value of the property. Recreation, too, would be better served by the development of more infrastructure (trails, picnic tables, a blind, etc.).

The status quo option, while important as a basis for comparison, is not an attractive option. As Drew Jones told us, CES just spent \$200,000 on this purchase and will likely spend

²⁴ Conversation with Hank Art, May 10, 2005

an additional \$100,000 to obtain the last third of the parcel, and they want to see it used in the best possible way.

Alternative Two: Long-Term Planting Research

This alternative would recommend the development of a long-term, large-scale experimental research program on the Wire Bridge Farm parcel. Successional research was suggested by members of the Committee and discussed with several biology professors. The focus of the research effort would be the successional patterns that arise as old fields grow back toward forest; this could be done in a number of ways, but one emerged from our meeting with Joan Edwards, David Smith, and Manuel Morales as the most interesting and desirable.

Professors Edwards and Smith in particular were enthusiastic about the idea of planting arrays of trees (sugar maple and beech, for example) and studying their dispersal patterns as the forest grew to full canopy height. This seemed like a creative experimental design that would be less likely than other options to be duplicated elsewhere, allowing HMF to make a unique contribution to the scientific community. It also fits well with the current research focus of HMF, including the permanent plot system. This plan would begin by tilling the entire area to remove the existing vegetation and mix the soils; the plots would then be assigned randomly to treatment groups and planted with arrays of tree saplings. This would require large plots of approximately one hectare and would probably work best with four treatments, each replicated three to five times depending on space constraints. Ideally, twenty plots would be available, but the available space will not allow that (see Figure 20). We were unable to obtain more specific details about the experimental design, as it has not been thoroughly planned by the biology faculty at this time.

The layout of the plots would avoid the areas immediately surrounding the fens and rivers (the buffer zones and the inner riparian zones) for two reasons: these areas might be non-uniform with the rest of the field, and the activity involved in establishing and maintaining the plots could adversely impact the rivers and wetlands and their inhabitants. Tilling the soil in the outer riparian zone would require the approval of the Conservation Commission; it is likely to be approved if erosion control measures are put in place.²⁵ The

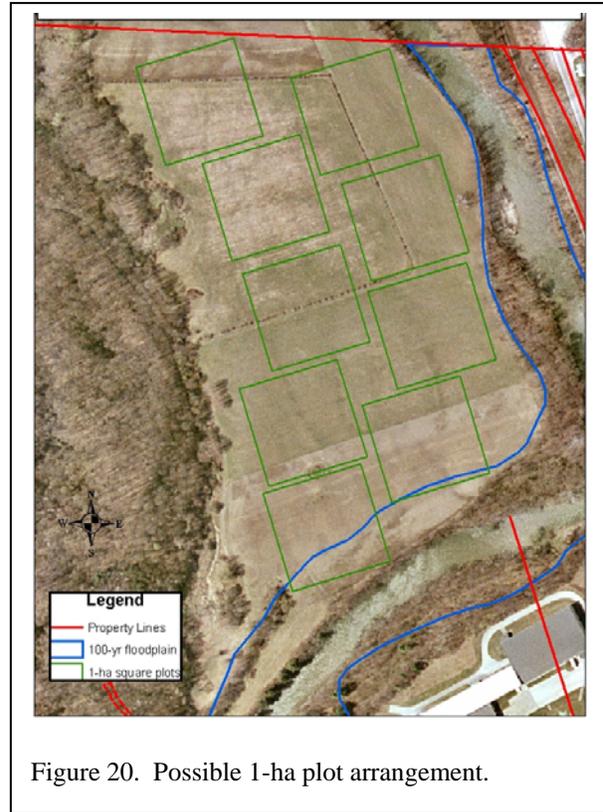


Figure 20. Possible 1-ha plot arrangement.

planting of native species is an allowed use in the outer riparian zone, so this piece of the setup would not require special permitting.

According to David Smith, research and recreation do not mix well, and professors who might invest a substantial portion of their careers on this research would not be keen on the idea of the general public disturbing their plots. Therefore, recreational access to the site would have to be limited or cut off altogether. Smith thought that even a perimeter loop trail might bring in too much traffic; he advocated banning recreational use of this property and encouraging it in other regions of HMF. If this were to happen, the existing Hoosic River Trail might need to be rerouted or terminated further from the Wire Bridge Farm field area. As it is, when people reach the southern tip of the field, they are likely to want to continue northward and might disregard signs denying them access. Therefore, the trail should either end further south or be rerouted

²⁵ Interview with Hank Art, April 19, 2005

through the woody slope on the western portion of the parcel. In addition, an absolute ban on recreation would not be entirely possible, as John Tietgens and his children have lifelong hunting rights on the parcel guaranteed to them in the deed. If this research alternative is selected, the professors will have to negotiate with the Tietgens family to limit the areas and times in which hunting is carried out.

This alternative would not require improvement of access to the parcel. The initial setup of the plots could be done in the summer months, when the existing road is passable; after that, the researchers would likely need to access the parcel only once or twice per year to survey the vegetation. This infrequent access would be easily accomplished via the existing trail or road. In addition, given that the researchers would rather keep people out of the property, the current access limitations could be seen as an asset rather than as an obstacle.

The startup costs of this research initiative would be very high. Hundreds of saplings would have to be purchased and planted; this would be a major undertaking. However, once the research was under way, the operating costs would likely be rather low. An annual or semiannual survey of vegetation would be somewhat labor intensive but not financially burdensome; professors might involve their students in the data collection. Access costs would likewise be low, as no improvements would be required. Most of the costs associated with a research project such as this one would most likely be covered by grants obtained by the researchers.

This research would take place over a long time horizon. According to Edwards and Smith, the research would probably take at least five years to plan and initiate; useful results would begin to be produced in another five years or so. It would take many more years before enough data had been collected to allow comparisons and analysis. Because of the long time

frame and large scope of this research, it would be most useful to faculty and a few thesis students. Students who attended the focus groups expressed concern about the time frame of the research because it would go beyond the length of any student's tenure at Williams. Students were also concerned about the extent to which recreation would be limited by this research option.

The question of who exactly would carry out this research remains unresolved. Edwards and Smith already have their own research projects, so they would not be interested in doing research on the site. Morales has other research interests (see Alternative Three). The professors with whom we discussed this option expressed hope that this potential research site would help attract new faculty members, but Cappy Hill (Provost of the College) said that the administration would be unlikely to support the establishment of a potential research facility for a potential faculty member, especially when the opportunity cost to current faculty, students, and community members in terms of lost educational and recreational possibilities would be high.²⁶

Alternative Three – Short-Term Successional Research

The idea of using the field portion of the parcel for successional research plots was initially proposed during our meeting with the Committee and was later expanded upon during our meetings with the biology professors. Short-term early field succession plots were proposed as an alternative to the long-term plantings or growth plots. Manuel Morales was the most enthusiastic about establishing such plots.

The experiment would be started by removing all vegetation from the field and then tilling it to mix up the soils. Grassland fields would then be allowed to grow in with start times staggered every four years, such that plots would be of different ages. Plots would be cut back

²⁶ Interview with Cappy Hill, May 2, 2005

approximately once every twelve years to return them to the earliest field state. Three replicates of each plot would be necessary. “Age” would be randomly assigned to each plot in order to eliminate the effects of different land uses across the field. The plots would need to be approximately one hectare each and could be essentially any shape except for rectangular. Circular and square plots minimize the edge-to-area ratio. Morales did not believe buffers would be necessary between the plots, other than 5-10 foot wide paths between each for access. Approximately 9 1-ha plots will fit on the land, assuming CES buys the north parcel.

This plot system was presented as being much more conducive to student research and theses than the longer-term plots since results are more immediate. This connects with the student comments from the focus groups. Students were largely opposed to using the entire field for research unless it intimately involved students. Morales also thought the early succession plots could be used by classes and labs, in addition to theses and independent projects. The educational value of the project to students, therefore, exists, but is not the primary function or benefit of the field plots.

While the other biology professors did not think these plots were particularly unique or interesting in terms of research, Morales thought there was a lot more that could be done with such plots than was discussed at our meeting with three ecology professors together. David Smith and Joan Edwards questioned the value and uniqueness of the short-term succession plots since early succession research is done at many larger, research-oriented institutions. These have the manpower and space to perform extensive studies that would probably overshadow anything that could realistically be done here at Williams. Further, a similar project is being planned for the new clearing around the HMF weather station, so implementing this option on the Wire Bridge Farm parcel might be somewhat redundant. Morales, on the other hand, seemed to think

that short-term plots could provide an interesting look at how certain insect species use fields in different stages and how their populations may be affected by succession. While the other intensive research options do not particularly fit with the research interests of any current Williams faculty, the early succession option is pertinent to Morales' interests.

Unlike the other intensive research options, Morales stated that limited passive recreation on the parcel would be compatible with early field succession research so long as the uses were clearly separated. As recreation was stated as a priority for many of those we interviewed, we recommend that the Committee make an effort to incorporate recreation in some form into this use. By maintaining the parcel as field, the short-term succession option maintains the aesthetic value of the parcel and also allows it to remain as prime habitat for fauna. A trail around the field perimeter was one of the most popular suggestions in the focus groups and was also supported by many faculty members for its value as a nature trail. This option would not encroach on the research plots so long as it was well-delineated and users were advised to remain on the trail. We also recommend running a spur from the loop trail to access the tepid spring for easier use by faculty and student researchers. Extending the trail up the slope to Northwest Hill Road does not directly impact the research use, but would attract more users. Morales suggested that the trail to the Wire Bridge Farm parcel not be well publicized in order to reduce its use and possible impacts on the research plots. We, therefore, suggest that the Hoosic River Trail end as a loop around the Wire Bridge field rather than continue to Northwest Hill Road under this use plan.

Horses are currently allowed on the Hoosic River Trail on a limited basis but would have to be completely excluded from the Wire Bridge loop to avoid adverse impacts on the research plots. Riders reaching the end of the Hoosic Trail may be tempted to continue on through the

open field, despite its closure, and many have been known to disregard prohibitions on horses in other parts of HMF. We suggest that the Committee consider closing the entire Hoosic River Trail to horses, or at least stop them further south on the trail so that they do not reach the field.

A nature blind would still be pertinent as the parcel is remaining as open field and the blind would not impact the research plots. Morales stated that a canoe landing would be acceptable as long as its users were advised to keep to the field's perimeter. The picnic area would have to be well delineated and a small fence around the area would be beneficial to the plot system's integrity.

Simply allowing field plants to grow in over the land would not be very costly, and so annual operating expenses would be low. Yet, since the land would be used by a researcher and/or classes rather than by CES directly, costs could likely be funded by research grants and by limited funding for classes and theses. According to the biology professors, these plots would take approximately three to five years to plan in detail and establish. Meaningful results would appear two to three years later.

Access to the property becomes a significant issue if labs are going to use the parcel. Every professor we talked to said it would be nearly impossible to conduct a constructive lab at the Wire Bridge Farm parcel with the current 60-75 minute round trip travel time. The option most favored by the faculty and students was the footbridge for its proximity to campus and apparent ease of use. As discussed in the access section, however, this is not a feasible method of access. The only other option to reduce travel time is to regrade the current road entering the property from the northwest. Simple gravel grading would be sufficient for this plan's uses. Regrading the road would make it passable in the fall and spring at least, and would also trim several minutes off the travel time. While regrading is not absolutely necessary for research-

only use of the parcel, it would make access much easier. It would be up to the researcher to decide whether the benefits of easier access outweigh the costs of regrading the road. The lockable gate should remain in place on the access road to keep out unwanted visitors who may impact the research plots.

Setting up and designating plots should also take into account wetlands and riparian areas and their pertinent regulations. The planting of native species and simply monitoring plant growth is permitted within buffer zones around both areas and would not be constrained by regulations. Tilling within these zones, however, would require Conservation Commission approval and would require significant erosion controls. Morales stated that he has no intentions of encroaching on the wetlands. The riparian area consists of riparian forest that cannot legally be cut without approval from the Conservation Commission. As this has high aesthetic value and is prime habitat for waterfowl and other birds, we do not recommend that this forest be altered. The riparian zone in combination with the fens limits the boundaries within which one can establish plots. The short-term plots would not likely alter the current use of the field by various animals since it would remain as open space. This is one of the ecological benefits this option holds over the long-term plot use.

In terms of the impact on neighbors, this research use is unobtrusive and would maintain the current aesthetics of the field. Traffic via the right of way through Valley View Farm would be limited, and HMF should discuss plans to grade the road with the landowners before doing so.

This alternative emphasizes research, with teaching and recreation as secondary concerns. These priorities mesh well with the HMF Mission Statement which stresses use for educational purposes while also advocating mixed use of the forest.

Alternative Four: Agriculture and Composting

Based on student and faculty interest, Dining Service interests, and examples at other four-year institutions, the best model for a school-run farm would probably include several to a dozen acres of organic-type food production, another several acres set aside for student or professor research and manipulation, and a significant portion of hay field or silage corn to be used for a few head of animals and to keep field open. It would be run by a paid, year-round staff person who lived nearby and was responsible for planning, organizing and providing some labor on the farm. This person would also facilitate integration of the farm with academic classes, labs, projects and other activities. Student volunteers and paid workers during the school year and the summer would provide the bulk of the labor, and in the process would learn through experience about food production, plant growth, animals, farm planning, etc. Members of the College community may or may not get portions of the harvest in a CSA type set up, and some to all of the food could be channeled into Dining Services or Log Lunch. The school's daily half-ton of compost would be brought to the site each week and treated there to become useful soil inputs in our own and other farms, and possibly used by Buildings and Grounds.²⁷ This would provide a guaranteed destination for our compost and an important educational tool to students who helped with the farm. The farm would have access on an improved road through Pownal, significantly shortening the travel time and year-round accessibility by classes, farm workers, and recreationalists. Recreation including loop trails, wildlife blinds, a canoe landing, and low-impact camp site would be compatible and could be heavily used without compromising the integrity of the farm. Funding would come through the school, Dining Services, and/or educational and agricultural grants such as the Luce Grant.

²⁷In a telephone interview on May 3, 2005, Dave Fitzgerald, College Horticulturist, stated that demand for compost would be limited.

Using the open field of the Wire Bridge Farm parcel for some type of school agriculture was, with trails, the most popular option among Williams College students who came to our three focus groups in mid-March and early April. In each session the idea was recommended independently by a student without our suggestion, and was fervently discussed without our shaping the conversation. Ken Brown, the student representative to the Committee and President of WOC as well as a forest caretaker and a student who has used HMF in Biology and Geoscience studies, likewise wanted to see truck-farming of vegetables and perhaps livestock, but was concerned about the feasibility of the project. Jay Racela, Environmental Studies Lab Technician and member of the Committee, wanted to see some type of agricultural research--potentially looking at plant genetics or ecology--conducted on the parcel. Suggestions for agricultural use on the parcel ranged in scale from a large garden to a study away farm program similar to the Williams-Mystic program. The general consensus, however, was that the activity should be larger than a garden, smaller than a farm, and should utilize sustainable or organic farming and be incorporated into the College's curriculum. The compatibility of farming with recreational use such as trails, canoe landing, camping sites and a wildlife blind, as well as the improved vehicle access that would certainly have to accompany such an operation made it even more popular with students.

Agriculture is a good fit for the parcel in many ways. Joel Burrington, the farmer who currently uses the field for silage corn and hay, says the land is among the best in the area for farming because of its soils.²⁸ Farming would be in alignment with the history of the Wire Bridge Farm parcel, reconnecting HMF with its historical roots.

In addition to student and some faculty interest in agriculture on the land, Dining Services has expressed some interest in using the parcel to handle the College's food waste.

²⁸ Conversation with Joel Burrington, March 11, 2005.

Currently Holiday Farm in Dalton, MA takes all of our compost at no charge. This relationship is somewhat tenuous however, and members of Dining Services feel it would be to the College's advantage to find a more local end point, and that to run the program ourselves has educational if not financial benefits. The \$20,000 annually spent on collection, storage, and transportation of food waste could be put towards developing and operating such a compost option. Dining Services would be further interested in getting food from a College-run farm (as would Log Lunch) but they worry that crops might compete with those sold to the College by local farmers like Bill Stinson. Indeed, Stinson had the same worries!²⁹ Moreover, such a farm could not be funded by the Dining Service budget.

Most importantly, the farm option has potential to be of major educational value to Williams College students. Because of improved road access, it could be used more easily in a class or lab period. Theses could involve manipulation and shaping of the project by students themselves. The experiential education afforded to students who volunteered on the field or in the planning of the farm or who worked during the school year or as summer interns is high. This type of education is viewed as less important than academic, class-related education by the Committee and the HMF mission statement. However, it is more important than pure recreation. Students who have worked in the forest or participated in Fall Fest, Maple Fest and other events reported experiential education to be of great value to their educational experience.

Using the Wire Bridge Farm parcel as a farm would incur the highest costs of any of our alternatives. It would require major improvement of the existing road through Pownal to allow for access by compost trucks, farm vehicles and personal vehicles year-round. In all likelihood the purchase of farm equipment would prove necessary with a great initial investment as well as substantial maintenance costs. A greenhouse, too, would be useful for expanding the growing

²⁹ Conversation with Bill Stinson, March 14, 2005

season (increasing overlap with the school year) and could be heated by diversion of piped spring water through the structure, but the initial construction would be costly. Actual crop inputs, such as seeds, fertilizers, animals and animal related medical, nutritional and care products would prove expensive as well.

Staffing might prove the most expensive proposition of all, as a permanent position would have to be created to organize and run the farm program. The Hampshire College farm, for instance, is run by three permanent staff and the Dartmouth farm by several. Helen Ouellette, Manuel Morales and Drew Jones have suggested that hiring such a person or people is currently outside of the likely means of CES or the College (estimate \$30,000 or more for one person's salary), especially in the current administrative environment. Moreover, it is entirely reasonable to believe, based on the relative success of paid HMF caretakers versus volunteer Forest Garden workers, that paid student positions would be necessary to keep the farm staffed and ensure student use of the farm. At Hampshire College, \$20,000 is spent annually to pay student workers throughout the year. These operating costs are often harder to attract money for than the one-time purchases.³⁰

This option would burden the right of way more than any of the others. In addition, the right of way specifically says that no commercial farming can be conducted on the parcel, excluding the possibility of selling our excess compost, contracting out management labor and buying food from a non-staff farmer, and possibly including community members or students in a community supported agricultural set up as used by the Hampshire College. Dubendorf stressed that the deed was not a "straight jacket", that legal negotiations could be made with the current land owners to increase our vehicular access, for example, in exchange for a field open to

³⁰Conversation with Drew Jones, March 9, 2005.

horse use by their boarders, construction of fences around the road, or perhaps even to rebuild the right of way farther from their house and barns.³¹

Further, even if the smell of compost potentially emanating from our site were protected under the nuisance bylaws under the health section, the administration would likely veto any plan that significantly impacted the environment of the neighbors to our north and west.

Perhaps the hardest thing to overcome internally, should legal and financial obstacles be circumvented, is the sense among many on the Committee that the lost opportunity of the field for legitimate research outweighs the benefits of the farm. Or, similarly, that the HMF mission statement emphasizes research and academic education over experiential or extracurricular education.

Alternative Five: Multiple Use

If the field was not used for a large-scale research experiment or an intensive agricultural field, it could become a place for short-term experiments that would not alter the integrity of the field and could be utilized by students. One purpose of this alternative is to incorporate the variety of small-scale research interests expressed by the faculty we interviewed, specifically David Dethier and Jay Racela. Research opportunities might include, but are not limited to: monitoring temperature and discharge of the tepid spring; botanical, zoological, geological, and microbiological studies of the fen; analysis of the sediment profile by digging a trench; and monitoring characteristics of the Hoosic River. These studies are on the scale that would be conducive to use by lab classes in Biology, Geosciences, and Environmental Studies. Dethier and Racela also indicated others who might be interested in studying various aspects of the site, including Ronadh Cox, Heather Stoll, and Lois Banta. Some professors already have monitoring

³¹ Interview with Don Dubendorf on April 22, 2005.

instruments in place, and other projects could be started whenever there was professor interest.

Use of the field would also fall onto a similar scale as the peripheral research. The multiple use plan sets up the large majority of the field for educational plots and a smaller part for student research. This allows a professor like Manuel Morales to perform small-scale successional studies. The student research portion of the plot could be open for independent projects or for agricultural experiments. An advantage of this use is that it allows for the highest utilization of the land by the student body and professors in a way that preserves its unique character. Professors can develop specific uses for their classes/labs, and thesis students and summer research students can do experiments and monitoring. A disadvantage is that it does not allow for the types of intensive research that Smith, Edwards, and Morales suggested. Though this plan leaves a generous portion of the field open to research, the experimental plots would have to be much smaller and less isolated, and the research value to the professors would be lower.

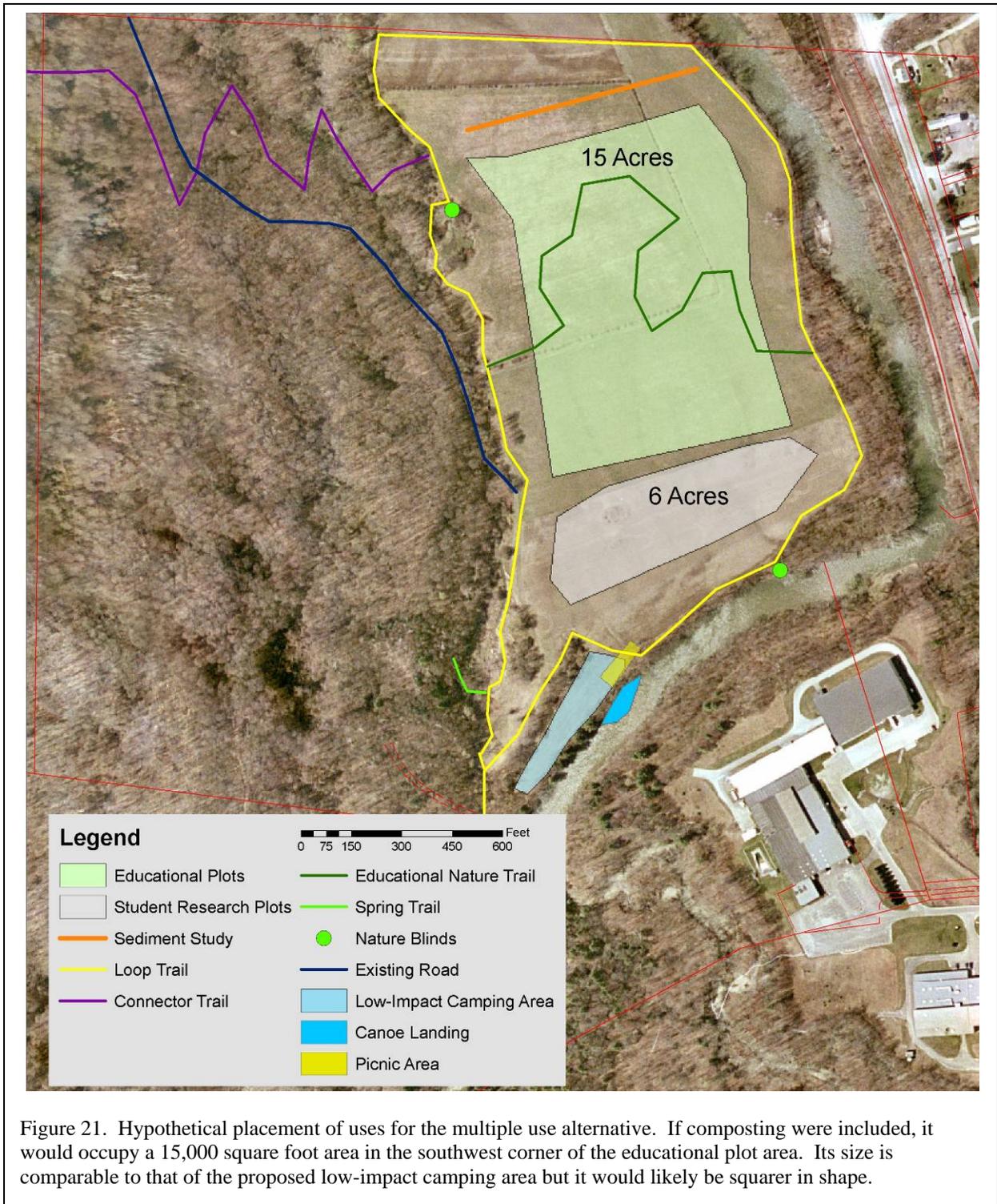
Composting would also be compatible with this option, as it does not take up much space on the field (approximately 15,000 sq. ft). However, composting is not a priority use of this site, as it would raise many issues that otherwise would not be part of the multiple use plan. It would add many logistical complications and expenses that would not otherwise be part of this alternative. In order to fairly evaluate the multiple use option, it was assessed both with and without composting.

Because of the student-directed nature of this alternative, increased access to the site is encouraged. This means that recreation is a heavy focus for multiple use. All of the uses discussed in the recreation alternatives section are applicable to this land use plan. These include

a field loop trail, a connector trail, nature blinds, a canoe landing, a picnic table, and a low-impact campsite. Opportunities for recreation were a priority among students and many members of the Committee who are interested in seeing the site used to its full potential. Committee members in support of multiple use include David Dethier, Jay Racela, Hank Art, Scott Lewis, and Ken Brown.

In order to make the use of the parcel feasible for lab sections, the access would need to be improved through the northern right of way. Recreation, as well, would be enhanced by improved access. Composting would also require major improvements of the road. Other costs of this alternative include recreational and research costs. Costs for recreation are minimal.

In regards to the environmental impacts of this alternative, they would be nominal, though the exact impacts would depend on the use of the field. The educational use of the field would have no negative impact on the environment. Composting effects would be minimal. One other concern is that erosion controls would have to be put in place when creating the sediment study trench. Finally, heavier use of the road by faculty and students through classes, labs, and research could burden the right of way. Figure 21 shows a possible layout of the proposed uses in this alternative.



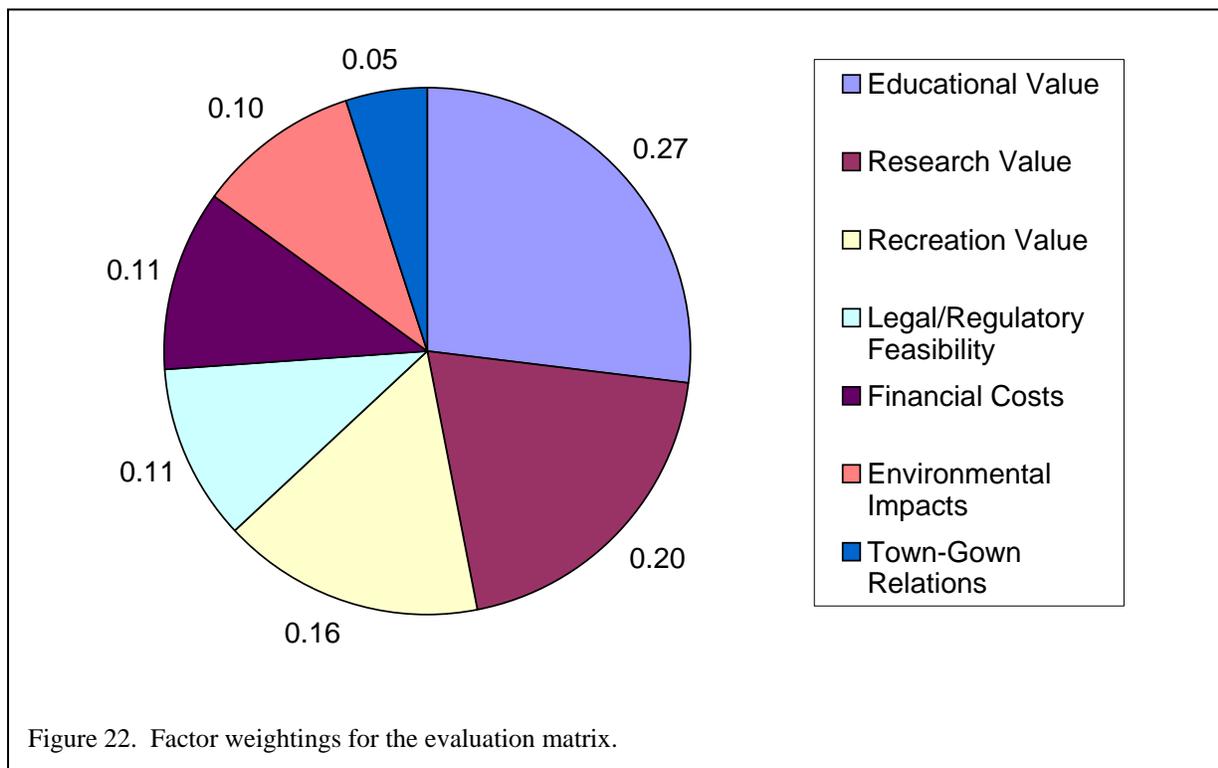
EVALUATION OF ALTERNATIVES

To analyze the strengths and weaknesses of each alternative in a way that allows comparison between options, we developed an evaluation matrix using a system of ratings and weighted averages. We identified the following major factors that should be taken into consideration:

- **Educational value.** This is the value of the parcel to Williams students' education. It includes the learning done through classes, labs, theses, and independent projects, as well as the experiential education gained through extracurricular use, employment as a caretaker, etc. It also includes a "uniqueness" value that represents the degree to which the alternative in question provides a unique learning opportunity within HMF, the Williamstown area, and the Williams curriculum.
- **Research value.** This is the value of the parcel to Williams faculty and other researchers. It includes the current faculty's projects, the potential for future faculty members to carry out experiments there, and the contribution these research efforts would make to the broader scientific community. It also includes a "uniqueness" value that represents the degree to which the alternative in question provides a unique research opportunity within HMF and the broader scientific community.
- **Recreation value.** This is the value of the parcel to people who would pursue recreation activities on the land. It includes the value of various recreation benefits (physical activity, nature appreciation, aesthetic appeal, etc.) and also includes a "uniqueness" value that represents the degree to which the alternative in question provides unique recreational opportunities within HMF and the Williamstown area.
- **Financial costs.** This factor attempts to capture the financial impact of each alternative. It includes startup and operating costs as well as costs associated with necessary access improvements. In addition, it includes the opportunity to obtain outside funding, which can offset some of the costs.
- **Legal/regulatory feasibility.** This is a measure of the degree of hassle that would be required to obtain necessary permits and comply with applicable regulations. The major considerations here are the right-of-way issues and the environmental regulations that apply to the parcel.
- **Environmental impacts.** This factor estimates the environmental impacts of the development of infrastructure and the use of the parcel in the ways associated with the alternative in question. It includes consideration of the impacts on the rivers, wetlands, rare species, and other flora and fauna on the parcel.

- **Town-gown relations.** This is an attempt to predict the effect of the alternative in question on town-gown relations. It includes the impact on the abutters and the potential for the wider community to use and benefit from the parcel.

Based on the information we gathered through our interview process, we weighted these major factors as shown in Figure 22. We then broke each major factor into several sub-factors that distinguished between the various components of, for example, the educational value of the parcel. We assigned weights to these sub-factors as well. These weightings do not represent the view of any one person we interviewed, but they are rather an effort to accurately represent the diverse opinions of the entire College community. This cannot be entirely objective, but our judgment was informed by our comprehensive community research.



We used this matrix to evaluate and compare six alternatives: maintenance of the status quo, development of long-term successional research with plantings, development of shorter-term field succession research, development of agriculture and composting, multiple use without composting, and multiple use with composting. We chose to include two multiple use options

because of the vast logistical and financial challenges posed by composting – we believe that the magnitude of these issues is much greater than that of the difficulties of all the other uses.

Because one of the benefits of the multiple use alternative is its flexibility in terms of the exact components that are implemented, we wanted to make sure that it received a fair evaluation and was not overly burdened by the composting issues.

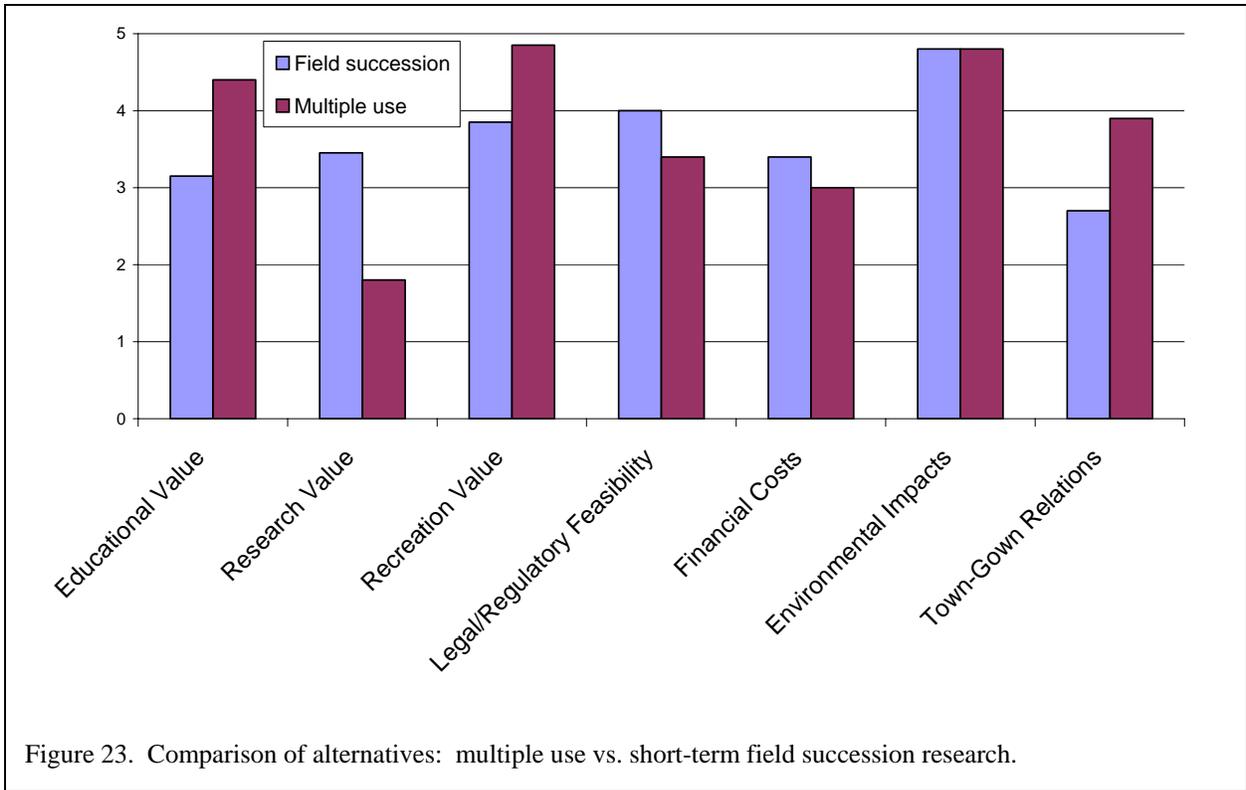
We scored each alternative for each sub-factor on a scale of 1 to 5, with 1 being “bad” (difficult, poorly suited, low value, expensive, etc.) and 5 being “good” (simple, well suited, high value, inexpensive, etc.). These scores were based on the information we gathered in developing the specifics of each alternative as well as on the preferences we heard in our interviews.

To calculate the total score of each use alternative, we computed a weighted average for each major factor based on the sub-factors’ scores and weights. We then calculated an overall weighted average based on the major factors’ scores and weights. Table 1 shows the overall scores of the alternatives; the entire evaluation matrix is presented in Appendix C.

Table 1. Summary of alternatives’ scores.

	<i>Weight</i>	Status Quo	Plantings	Field Succ.	Ag. & Comp.	Multi-Use	Multi + Comp.
Educational Value	<i>0.27</i>	1.8	2.3	3.2	4.1	4.4	4.4
Research Value	<i>0.20</i>	1.8	3.7	3.5	2.0	1.8	1.8
Recreation Value	<i>0.16</i>	3.2	1.0	3.9	4.4	4.9	4.4
Legal/Regulatory Feasibility	<i>0.11</i>	5.0	4.6	4.0	2.4	3.4	2.4
Financial Costs	<i>0.11</i>	4.0	3.9	3.4	1.4	3.0	2.3
Environmental Impacts	<i>0.10</i>	5.0	4.6	4.8	3.8	4.8	4.8
Town-Gown Relations	<i>0.05</i>	3.4	2.8	2.7	3.2	3.9	3.0
TOTAL	<i>1.00</i>	3.0	3.0	3.6	3.2	3.7	3.4

The results of the evaluation are quite close on the whole. However, two alternatives scored a bit higher than all the rest; these were multiple use without composting and the development of shorter-term field succession research. Because these two options scored the highest and were so close, it is useful to look more closely at their scores for each major factor in order to more fully understand their relative strengths and weaknesses (see Figure 23).



RECOMMENDATIONS

Begin Immediately

Research and Education

- **Continue and strengthen observational studies and thermal spring monitoring** on the parcel. Improve the weir on the spring, get both temperature gauges to work, initiate pH, wildlife and botanical studies.
- **Plan small demonstrational long-term old-field succession plots** that can be used by labs and student research and incorporated into a nature trail—walking through different stages of forest regrowth. Determine the appropriate size, starting conditions of field, number of plots, and passage of time between plots, and identify a faculty sponsor.
- **Plan educational plots for labs, classes, theses students and if possible, legitimate faculty research.** This could be Morales-type early field succession studies, but the focus must be incorporating student use. Nine 1/2 hectare plots easily fit, allowing for other opportunities (student initiated research, recreation, etc.) as well as some buffer between. 2/3 hectare plots should be considered if the 1/2 hectare is too small. Determine extent to which signage and fencing will be necessary to protect plots.
- **Locate and permit a location for a trench** to be dug across the field perpendicular to the Hoosic River where sediment studies can be done by David Dethier et. al.
- **Develop plans for making a section of field useful for student-initiated research.** This may include mowing field differently or tilling, and advertising or recruiting of thesis students and communities and ecosystems students.

Trails and Recreation

- HMF and the Williams Outing Club (WOC) should **improve the Hoosic River Trail** (widen, manage for water, move trail to avoid crooked-stemmed aster if necessary, improve signage) to increase frequency and ease of use.
- HMF and WOC should **lay out and construct the proposed Connector Trail** from the Wire Bridge Farm field to Northwest Hill Road such that it can be used by hikers, runners and skiers as a large loop trail, by labs and classes to access the slope, and by a Gator for maintenance or administrative access. HMF should obtain approval for a small dirt parking lot off Old Northwest Hill Road at the Connector trailhead.
- HMF and WOC should **build two small blinds for wildlife viewing**—one in the riparian forest where river, woods and field can all be seen, one near the fen with a view of the field. These should encourage appreciation of wildlife, provide ecological information

inside, be accessible by interpretive nature trail, be small enough to discourage habitation, and allow for comparison of different ecosystem types.

- HMF should **obtain a permit to alter bank in the riverfront area along the Hoosic River for a canoeist to pull out** on the shore and ascend to the open plain easily. This land is jurisdictional under the Massachusetts Wetlands and Rivers Protection act and will need Conservation Commission approval.
- The Committee should **develop policy specific to the Wire Bridge Farm property** that differs from regulations in the rest of HMF:
 - Allow for low-impact camping in a designated area
 - Permit small fires in one established fire-ring near the designated camp site.
 - Allow fishing along the Hoosic River from Wire Bridge Farm.
- The committee should **establish a clear horse use policy** on the new parcel—we recommend it be in keeping with standards on the Hoosic River Trail.

Road Access

- HMF should, with Shelley Porter of Valley View Farm and the respective lawyers of both parties, **establish the exact limitations and allowances deeded to the College** for use of the right of way through her property.

Ecological

- **Request that MA NHESP survey the property for rare or threatened species or species of special concern** so that we can protect their habitat sufficiently.
- **Request that the Conservation Commission map the wetlands to determine their official boundaries.**³² This could be useful information ecologically and for classes, and it has legal implications as to the activities allowed within its borders.
- **Develop plan for invasive species management in the Wire Bridge Farm parcel.** We recommend removing phragmites, multiflora rose, and purple loose-strife unless the process is prohibitively damaging to the ecosystem.
- Ask Burrington to **mow the pasture land later in the season** to provide for bobolink and meadowlark habitat.

³² According to a conversation with Hank Art (April 21, 2005), the Williamstown Conservation Commission might be able to map the boundaries of the fens on the Wire Bridge Farm parcel as part of a workshop/training session.

In The Near Future

Research and Education

- When plans for the field are complete, end contract with Joel Burrington.
- Set-up demonstrational successional plots
- Begin educational, lab-gearred research
- Begin student research
- Dig sediment study trench

Trails and Recreation

- Build canoe landing
- Construct interpretive trail
- HMF caretakers maintain Hoosic River Trail and Connector Trail
- Build fire ring and designate low-impact camping area. Build pit-toilet if deemed necessary.

Road Access

- If politically and financially feasible, **gravel and crown the 1.0 mile road from Northwest Hill road to the property to allow for car and van access.** Develop a small dirt parking lot at the base of the hill.
- Should Steinerfilm go bottom-up, we should **readdress the possibility of a footbridge over the Hoosic** associated with a parking lot on the Steinerfilm property.

Ecological

- **Reduce invasive species presence in Wire Bridge Farm parcel.** Pam suggested starting this July with cutting and direct-to-stem herbicide application of all phragmites plants, and then moving on to the multiflora rose and purple loose-strife.
- **Monitor impacts of recreation on species and habitats.**
- **Maintain several hectares of open field for habitat.**

REFERENCES

People Consulted

HMF User Committee Members

Drew Jones—HMF Manager CES
Joan Edwards—Professor of Biology
David Smith—Professor of Biology
Manuel Morales—Assistant Professor of Biology
Hank Art—Director of CES, Professor of Biology
David Dethier—Chair and Professor of Geosciences. Committee Chair
Jay Racela—Technical Assistant, CES
Scott Lewis—Assistant Professor of Physical Education
Ken Brown—WOC President, 2004-05, Geoscience Major

Administration and Staff

Helen Oullette—Vice President and Treasurer
Cappy Hill--Provost
Don Dubendorf—Williams College Attorney
Sarah Gardner—Assistant Director of CES
Robert Volpi—Director of Dining Services
Ginny Skorupski—College Nutritionist
Mark Petrino—Associate Director of Dining Services

Students

18 total, representing student researchers, caretakers, CES folk, recreationalists.

Key Informants and Quick Contacts

Harry Beals—Farmer on land until within the last decade
Marc Bottesi—Private contractor, roads and earth moving
Frances Brooks—Registry of Deeds, Adams
Joel Burrington—Current farmer on land
Karen Burrington—Registry of Deeds, Pownal
Mike Card—Planning Board, Williamstown
Leslie Cox—Manager of Hampshire College compost and animals
David Fitzgerald—Horticulturist and Grounds Supervisor
Briana Halpin—Former Williams Compost Fairy, employee of Caretaker Farm
Nancy Hanson—Manager of Hampshire College CSA
Tim Kaiser—Department of Public Works, Williamstown
Brian E. Koczela—Surveyor of Wire Bridge Farm parcel
Karin Landry—Stienerfilm Inc Treasurer
John O'Keefe—Harvard Forest in Petersham, Museum Coordinator
Shelley Porter—Owner of Valley View Farm
John C. Tietgens, Sr.—Previous owner of Wire Bridge Farm
Pam Weatherbee—Local botanist

Literature and Websites Consulted

Literature

Dethier, David and T. MacMartin Harman II. 1998. *Hydrology and Geochemistry of the Northernmost Appalachian Thermal Springs, Williamstown, Massachusetts*. *Northeastern Geology and Environmental Sciences*. v. 20, no. 3, p.200-207.

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Scanu, Richard J. Soil Survey of Berkshire County, Massachusetts/ by United States Department of Agriculture, Soil Conservation Service; in Cooperation with Massachusetts Agricultural Experiment Station. Washington, D.C: Soil Conservation Service, 1987.

Deeds

John and Ellen Tietgens → Williams College 2004
(including option to purchase, easements, uniform settlement statement, etc)
Shavaun Towers → Steinerfilm, Inc, 1973
Preston Robinson → John and Ellen Tietgens 1972
Right of Way Harry and Lenora Beals → John and Ellen Tietgens 1972
Everett Bacon → John Rofenole 1923
Joseph West → John Reed 1915

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DEP Home. Wetlands and Rivers. <http://www.mass.gov/dep/brp/ww/rpa.htm> Consulted April 19, 2005.

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http://www.williamstown.net/town_officials.htm. Consulted April 19, 2005.

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<http://botanika.bf.jcu.cz/suspa/pdf/BiblioOF.pdf> Consulted April 8-April 27, 2005.

Williamstown Rare Species. MA Natural Heritage and Endangered Species Program.

<http://www.mass.gov/dfwele/dfw/nhesp/townw.htm> Consulted May 22, 2005.

APPENDIX A
PARTIAL SPECIES LIST FOR THE WIRE BRIDGE FARM PARCEL

Plant Species -- Tietgens Parcel (incomplete)

Fen

<u>Botanical</u>	<u>Common</u>
<i>Carex hystricina</i>	Sedge
<i>C. leptalea</i>	
<i>C. lurida</i>	Sedge
<i>C. flava</i>	
<i>C. vulinoidea.</i>	Sedge
<i>Juncus articulatus</i>	Jointed rush
<i>J. effusus</i>	Soft rush
<i>Scirpus atrovirens</i>	bulrush
<i>S. validus</i>	Soft-stemmed bulrush
<i>Salix erio</i>	
<i>Potentilla fruticosa</i>	Shrubby cinquefoil
<i>Eleocharis</i>	
<i>Lindera benzoin</i>	Spicebush
<i>Acorus calamus</i>	Sweetflag
<i>Typha latifolia</i>	Cattail
<i>Lythrum salicaria</i>	Purple Loosestrife
<i>Eupatorium perfoliatum</i>	Boneset
<i>Eupatorium maculatum</i>	Spotted Joe-pye weed
<i>Cornus racemosa</i>	Gray Dogwood
<i>Lonicera Morrowii</i>	Morrow's Honeysuckle (exotic)
<i>Rosa Multiflora</i>	Multi-flora Rose (exotic)
<i>Sambucus canadensis</i>	Elderberry
<i>Lilium canadensis</i>	Canada lily
<i>Lemna</i>	
<i>Leersia</i>	
<i>Thel palustris</i>	
<i>Glyceria stri</i>	
<i>Cornus alternifolia</i>	Alternate-leaved Dogwood
<i>Parnassia glauca</i>	Grass of Parnassus
<i>Hudrocotyle sp.</i>	Pennywort
<i>Alnus rugosa</i>	Speckled Alder

Riparian Forest

<i>Acer nigrum</i>	Black Maple
<i>A. Saccherum</i>	Sugar Maple
<i>Quercus rubra</i>	Red Oak
<i>Quercus velutina</i>	Black Oak
<i>Carpinus carolinensis</i>	Ironwood
<i>Tilia americana</i>	American Basswood
<i>Juglans cinereas</i>	Butternut
<i>Ulmus Americana</i>	American Elm
<i>U. rubra</i>	Slippery Elm
<i>Acer platanoides</i>	Norway Maple (exotic)

APPENDIX B
RARE SPECIES FOUND IN WILLIAMSTOWN, MA

Taxonomic Group	Scientific Name	Common Name	State Rank
Fish	<i>Catostomus catostomus</i>	Longnose Sucker	Special Concern
Fish	<i>Notropis bifrenatus</i>	Bridle Shiner	Special Concern
Amphibian	<i>Ambystoma jeffersonianum</i>	Jefferson Salamander	Special Concern
Amphibian	<i>Gyrinophilus porphyriticus</i>	Spring Salamander	Special Concern
Bird	<i>Ammodramus henslowii</i>	Henslow's Sparrow	Endangered
Bird	<i>Bartramia longicauda</i>	Upland Sandpiper	Endangered
Bird	<i>Oporornis philadelphia</i>	Mourning Warbler	Special Concern
Crustacean	<i>Cambarus bartonii</i>	Appalachian Brook Crayfish	Special Concern
Dragonfly/Damselfly	<i>Enallagma carunculatum</i>	Tule Bluet	Special Concern
Beetle	<i>Desmocerus palliatus</i>	Elderberry Long-Horned Beetle	Special Concern
Butterfly/Moth	<i>Erora laeta</i>	Early Hairstreak	Threatened
Butterfly/Moth	<i>Pieris oleracea</i>	Eastern Veined White	Threatened
Vascular Plant	<i>Acer nigrum</i>	Black Maple	Special Concern
Vascular Plant	<i>Adlumia fungosa</i>	Climbing Fumitory	Threatened
Vascular Plant	<i>Amelanchier bartramiana</i>	Bartram's Shadbush	Threatened
Vascular Plant	<i>Blephilia ciliata</i>	Downy Wood-Mint	Endangered
Vascular Plant	<i>Carex alopecoidea</i>	Foxtail Sedge	Threatened
Vascular Plant	<i>Carex bushii</i>	Bush's Sedge	Endangered
Vascular Plant	<i>Carex hitchcockiana</i>	Hitchcock's Sedge	Special Concern
Vascular Plant	<i>Carex polymorpha</i>	Variable Sedge	Endangered
Vascular Plant	<i>Carex schweinitzii</i>	Schweinitz's Sedge	Endangered
Vascular Plant	<i>Carex tetanica</i>	Fen Sedge	Special Concern
Vascular Plant	<i>Carex trichocarpa</i>	Hairy-Fruited Sedge	Threatened
Vascular Plant	<i>Clematis occidentalis</i>	Purple Clematis	Special Concern
Vascular Plant	<i>Conioselinum chinense</i>	Hemlock Parsley	Special Concern
Vascular Plant	<i>Cryptogramma stelleri</i>	Fragile Rock-Brake	Endangered
Vascular Plant	<i>Eleocharis intermedia</i>	Intermediate Spike-Sedge	Threatened
Vascular Plant	<i>Equisetum scirpoides</i>	Dwarf Scouring-Rush	Special Concern
Vascular Plant	<i>Goodyera repens</i>	Dwarf Rattlesnake-Plantain	Endangered
Vascular Plant	<i>Hydrophyllum canadense</i>	Broad Waterleaf	Endangered
Vascular Plant	<i>Hypericum ascyron</i>	Giant St. John's-Wort	Endangered
Vascular Plant	<i>Lonicera hirsuta</i>	Hairy Honeysuckle	Endangered
Vascular Plant	<i>Malaxis brachypoda</i>	White Adder's-Mouth	Endangered
Vascular Plant	<i>Milium effusum</i>	Woodland Millet	Threatened
Vascular Plant	<i>Ophioglossum pusillum</i>	Adder's-Tongue Fern	Threatened
Vascular Plant	<i>Petasites frigidus var palmatus</i>	Sweet Coltsfoot	Endangered
Vascular Plant	<i>Quercus macrocarpa</i>	Mossy-Cup Oak	Special Concern
Vascular Plant	<i>Rhododendron maximum</i>	Great Laurel	Threatened
Vascular Plant	<i>Ribes lacustre</i>	Bristly Black Currant	Special Concern
Vascular Plant	<i>Sanicula odorata</i>	Long-Styled Sanicle	Threatened
Vascular Plant	<i>Sisyrinchium mucronatum</i>	Slender Blue-Eyed Grass	Endangered
Vascular Plant	<i>Solidago macrophylla</i>	Large-Leaved Goldenrod	Threatened
Vascular Plant	<i>Sorbus decora</i>	Northern Mountain-Ash	Endangered
Vascular Plant	<i>Sporobolus neglectus</i>	Small Dropseed	Endangered
Vascular Plant	<i>Symphyotrichum prenanthoides</i>	Crooked-Stem Aster	Threatened
Vascular Plant	<i>Trichostema brachiatum</i>	False Pennyroyal	Endangered
Vascular Plant	<i>Viola nephrophylla</i>	Northern Bog Violet	Endangered
Vascular Plant	<i>Waldsteinia fragarioides</i>	Barren Strawberry	Special Concern

**APPENDIX C
EVALUATION MATRIX**

	Factor Weight	Status Quo	Long-Term Plantings	Field Succession	Agriculture & Composting	Multiple Use	Multiple Use + Compost
Educational Value	0.27	1.8	2.3	3.2	4.1	4.4	4.4
Classes/Labs	0.4	2	2	3	4	5	5
Theses	0.15	2	4	4	3	4	4
Extracurricular Use	0.1	1	1	3	5	4	4
Student Workers	0.15	1	1	3	5	4	4
"Uniqueness"	0.2	2	3	3	4	4	4
Research Value	0.20	1.8	3.7	3.5	2.0	1.8	1.8
Current Faculty	0.6	2	3	4	2	2	2
Prospective Faculty	0.15	1	4	2	2	1	1
Scientific Contribution	0.05	1	5	3	1	1	1
"Uniqueness"	0.2	2	5	3	2	2	2
Recreation Value	0.16	3.2	1.0	3.9	4.4	4.9	4.4
Nature Appreciation	0.25	4	1	5	4	5	4
Aesthetics	0.2	5	1	4	3	5	4
Physical Activity	0.3	2	1	3	5	5	5
Breadth of User Base	0.1	1	1	3	5	5	5
"Uniqueness"	0.15	3	1	4	5	4	4
Financial Costs	0.11	4.0	3.9	3.4	1.4	3.0	2.3
Startup Cost	0.25	5	2	3	1	3	2
Operating Cost	0.35	5	4	3	1	3	2
Access Cost	0.15	5	5	4	2	3	2
Opportunity for Outside Funding	0.25	1	5	4	2	3	3
Legal/Regulatory Feasibility	0.11	5.0	4.6	4.0	2.4	3.4	2.4
Rights-of-Way	0.6	5	5	4	2	3	2
Environmental Regulations	0.4	5	4	4	3	4	3
Environmental Impacts	0.10	5.0	4.6	4.8	3.8	4.8	4.8
Wetlands	0.3	5	5	5	4	5	5
Rivers	0.2	5	5	5	4	4	4
Rare Species	0.3	5	5	5	4	5	5
Flora and Fauna	0.2	5	3	4	3	5	5
Town-Gown Relations	0.05	3.4	2.8	2.7	3.2	3.9	3.0
Public Use	0.35	1	1	2	5	5	5
Impact on Abutters	0.45	5	5	4	1	3	1
The Horse Thing	0.2	4	1	1	5	4	4
TOTAL	1.0	3.0	3.0	3.6	3.2	3.7	3.4

