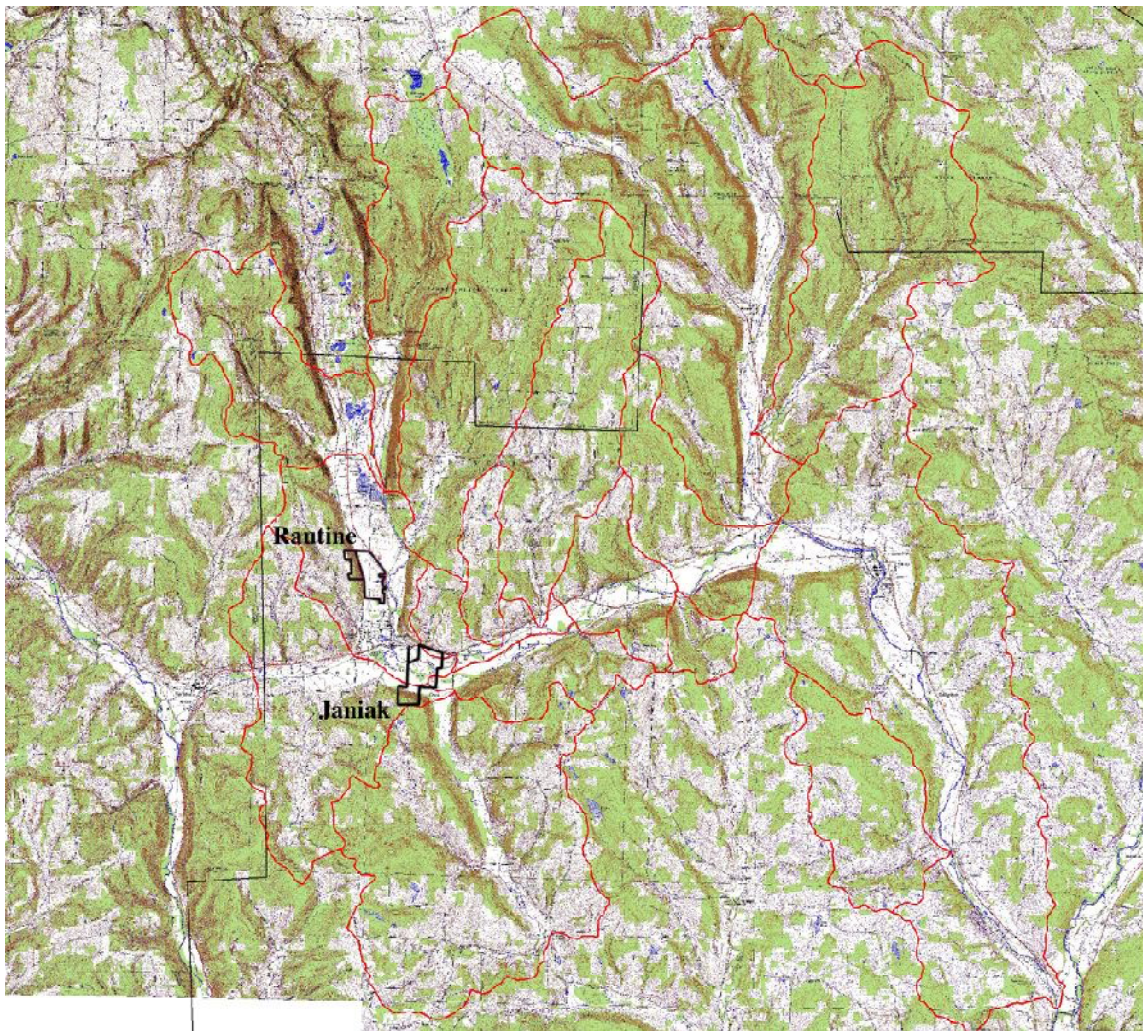


Tioga County, Fall 2002

The Janiak and Rautine properties fall within the Catatonk Creek Watershed, which encompasses more than 96,000 acres in the headwaters of the Susquehanna River in Tioga County, N.Y. Residents of the watershed formed the Citizens for the Catatonk Creek in the wake of major flooding during the mid-1990's in an effort to better understand their environment and what needed to be done to protect and preserve it. They undertook a comprehensive watershed plan, published in January 2002, which can be found online on the Upper Susquehanna Coalition website at <http://www.u-s-c.org/html/documents/CatatonkStrategicPlan.pdf>. As expected, flooding, gravel deposition, streambank erosion, and nutrient loading (due to agricultural runoff) were identified as priority issues.

The Plan suggests that wetlands play a vital role in flood reduction, stating that in the watershed. Students were thus challenged to create designs which fit into this Strategic Plan by alleviating flooding concerns and/or protecting the watershed.



The Catatonk Creek Watershed divided into sub-watersheds, and our selected sites. Rautine falls within the Main Catatonk watershed, while Janiak overlaps several.



View of a reclaimed gravel mine pond at the Porter site, ready for the next stage - housing.

Both of the selected sites are also located in the Town of Spencer, which currently has no zoning controls in place. As such, there is a critical role that any development on the sites will play in shaping the future of the Creek, and a strong case for making a positive, productive example from the sites to inspire their neighbors and communities to also create development with a consideration of the land downstream and the generations to come.

The economics of responsible design also remain crucial to the success of any projects. In this case, the valley floor is rich in sand and gravel resources. The challenge to the students was to implement schemes that

allowed mining while protecting farmland and natural resources, and to do so in a way that allows for concurrent development. Students looked at examples of such projects already underway. The Porter's Sand and Gravel Company has reclaimed one of their mines in Barton for a lake and future housing sites, and have also reclaimed areas of their main site for the family residence, farm, and a recreation area for their employees. In addition, students toured "The Links" golf course in Apalachin, which is also built upon a reclaimed gravel mine.

For these projects, staging - the order of operations, the locations for the heavy equipment to be used in gravel mining, and the appropriate locations for dumping the overburden (the leftover soils) from the mines - is essential. In addition to its obvious financial benefit of allowing concurrent development with the mining (thus permitting a faster financial return), staging considerations can greatly impact both the shape of a project and its impacts on its surroundings. To this end, we've chosen to focus the additional space on each page to explaining how each project team saw their design as developing over the years.



The students in the Fall'02 class tour "The Links" golf course.

We also note in the text the use of management techniques, such as the creation of wetland areas for flood control and wildlife habitat, stream buffer areas for protection of the waterways, careful placement of spoils out of the floodplain area, and a concern for the visual impacts on the surrounding community, mitigated through the use of vegetative screening and created earthen berms. In these ways, the projects consider and address both the visual effects and the noise of the gravel mining, and the environmental concerns raised by the Plan and their own projects, in a way that maintains the integrity of the rural environment.



Rautine Farm neighbors - Staging and management are essential.

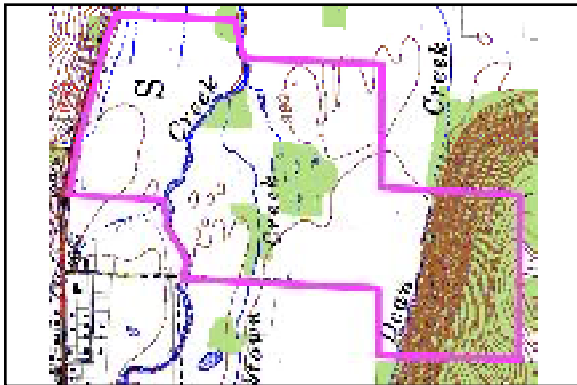
12: Good Design - Janiak Site

Site Introduction:

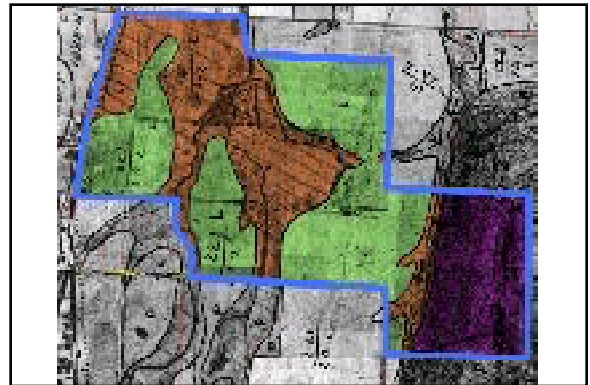
Pat and Penny Janiak's 273-acre parcel in the town of Spencer falls within the Dean and Catatunk Creek sub-watersheds of the Catatunk Creek area. It is presently a dairy farm, used primarily as grazing land and for growing corn for cattle feed. The owners are interested in exploring the land's potential for gravel mining. In addition, their new homesite overlooks the property, so protecting the aesthetic appeal is critical. The questions of what to do with the land once mining is complete, and how to maintain that visual appeal, were presented to the class.

The Janiak site has a number of characteristics which made it a particularly interesting project for the Rural Design Clinic. The site's high water table and the fact that most of the site lies within a flood plain limit the potential for significant building. The soils are nearly evenly divided into two groups, with significant differences in suitability for continued farming. Finally, the considerations of coordinating any development with the continued operation and future direction of gravel mining on the site provide an interesting challenge.

Site Analysis:



Slope Suitability



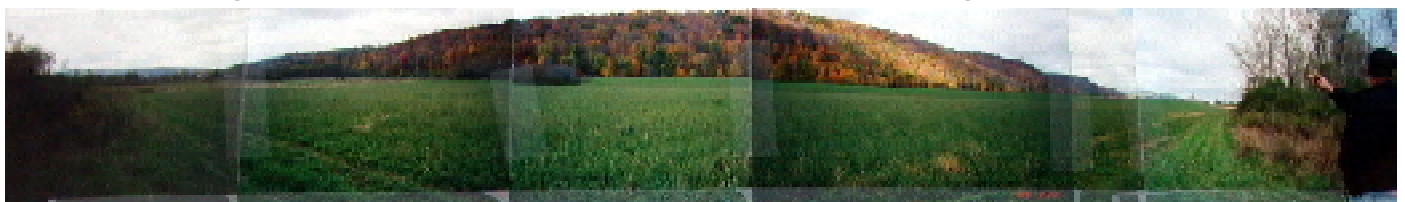
Soil Suitability



Significant Features



Photograph from Site Visit



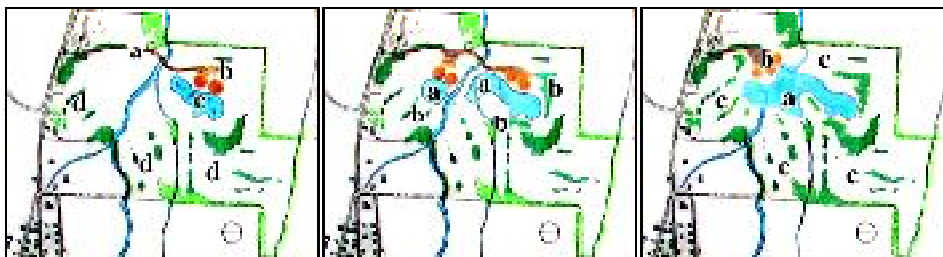
Janiak Site: Catatunk Golf Club



Design overview:

Because a large portion of the site lies in a flood plain, making housing development impractical, this design chose to capitalize on the open, relatively level site by creating an 18-hole public golf course. The location is also 12 miles from its nearest competitor. The goal is to utilize the gravel-pit pond's irregular shape to create an intimate interaction between the course and the water, and to design a competitive, attractive course that will lure players from the distant population centers.

In addition, the program preserves nearly all of the land as open greenspace; the sole development areas are the clubhouse and its associated parking, and a maintenance facility.



Stage 1:

- a: Access Road
- b: Open Driving Range
- c: First Mining Phase
- d: Begin Site Plantings

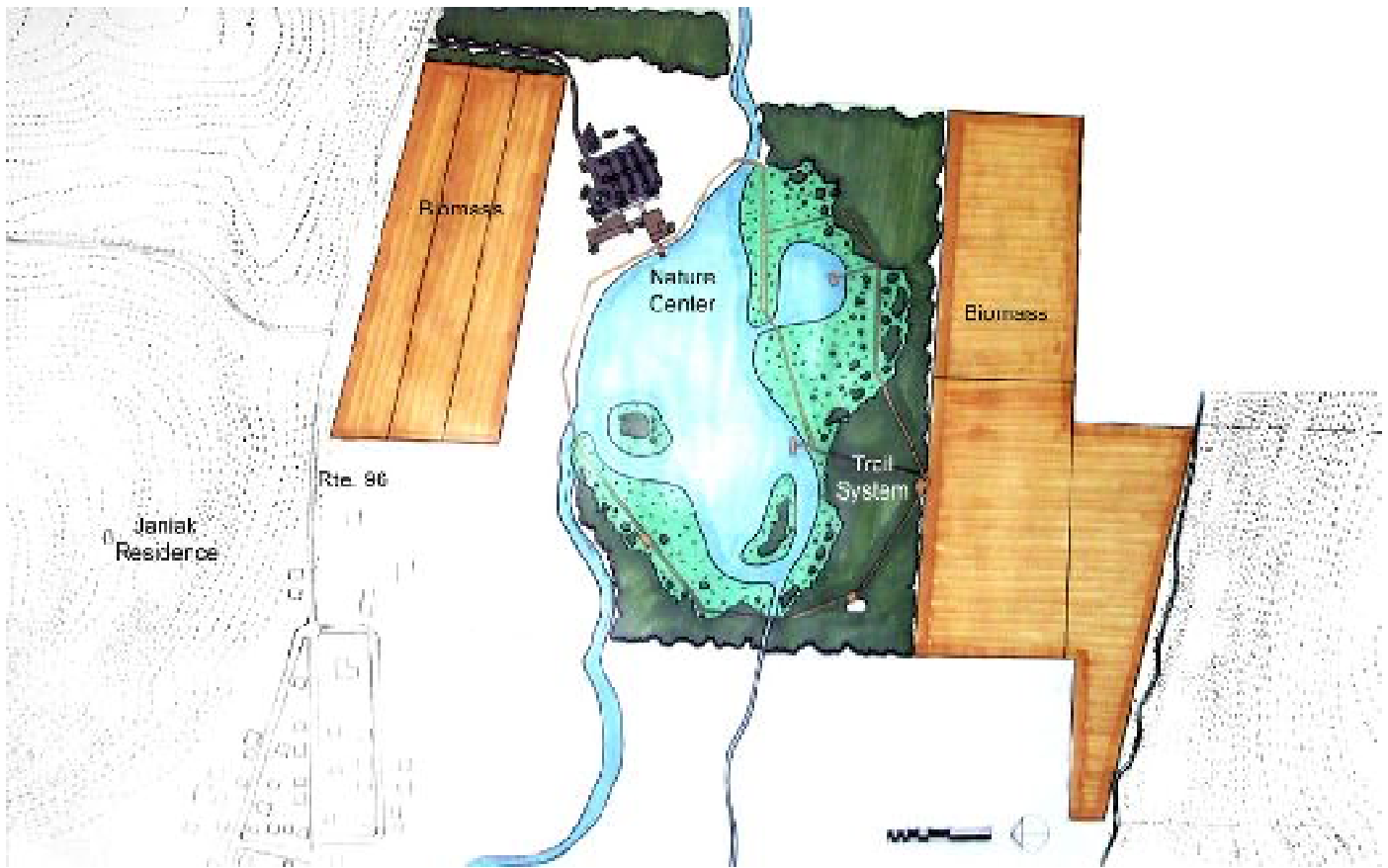
Stage 2:

- a: Second Mining Phase - Overburden used for landforms
- b: Expand Plantings

Stage 3:

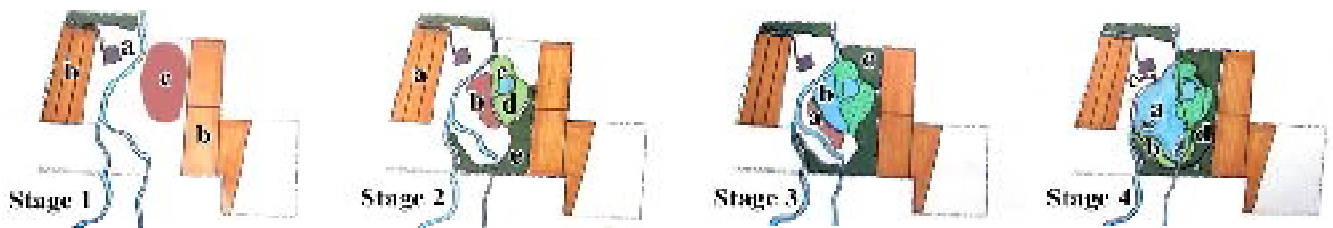
- a: Final Mining Phase
- b: Clubhouse & Pkg.
- c: Plant and open finished Golf Course

Janiak Site: Nature Center and Biomass Farm



Design overview:

Capturing the fertile soils with a biomass-farming operation, this proposal supplements the income from the gravel mine while buffering the surrounding area from it. Biomass farming is the planting and harvesting of renewable plant materials easily used as fuel products. One of the strengths of this is that it keeps a great deal of the land in agricultural production, even while the mining is going on in the center of the site. Once the mining is completed, the plan takes advantage of the lowered elevation to create wetland area and wildlife habitat. This amenity is supplemented by a nature center which also incorporates commercial ventures through a banquet hall and conference space. Finally, a trail system links the site together and provides for educational opportunity.



Stage 1:

- a: Access Road & Parking
- b: Plant Biomass Fields
- c: First Stage of Mining

Stage 2:

- a: Begin Biomass Harvests
- b: Second Stage of Mining
- c: Create Pond
- d: Wetlands Plantings
- e: Reforestation Plantings

Stage 3:

- a: Third Stage of Mining
- b: Enlarge Pond
- c: Expand Reforestation

Stage 4:

- a: Flood Mine for Pond
- b: Wetland Planting
- c: Construct Buildings
- d: Path System Creation

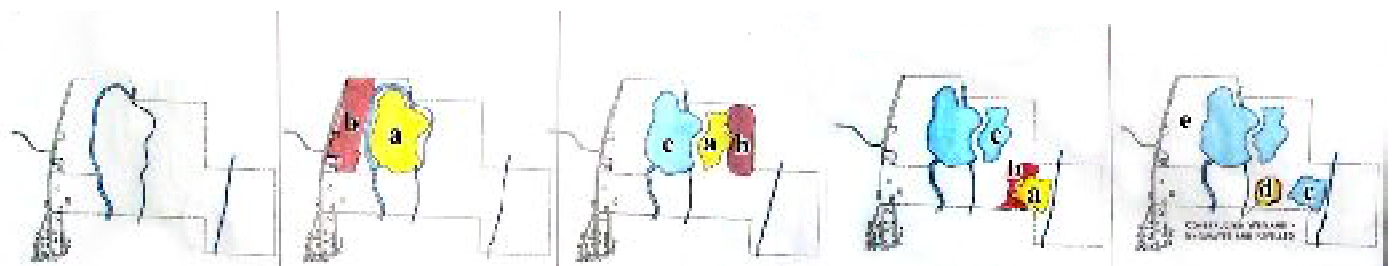
Janiak Site: Rural Equestrian Retreat



Design overview:

Focusing on the development of an equestrian center combining boarding and riding facilities, on- and off-site trails, and pasture space, this proposal seeks to maintain the land's rural character through the presence of horses, the planting of woodland-reclamation efforts, and the preservation of open pasture areas. The project also maximizes gravel mining opportunities and generates an aesthetic opportunity by working around the large ponds that mining can create. Overburden from the ponds is used to build up land for the equestrian uses.

With wetlands, a picnic area, woodland trails, a jumping trail, and loops around the ponds, a variety of pedestrian and equestrian uses are proposed which connect with an existing snowmobile trail, reinforce the land's rural character, and provide for varied uses.



Stage 1:
Temporary Stream
Diversion Measures

Stage 2:
a: Gravel Excavation
b: Overburden Dist.

Stage 3:
a: Gravel Excavation
b: Overburden Dist.
c: Pond Creation

Stage 4:
a: Gravel Excavation
b: Overburden Dist.
c: Pond Creation

Stage 5:
c: Pond Creation
d: Wetland Formation
e: Facilities Built

Janiak Site: A Rustic Campground



Design overview:

Through the gravel mining process, this project proposes the creation of a single, large pond carefully crafted for a rustic appearance and the impression of secluded areas. Around the shores, a number of campsites are created (some accessible to cars, some only by boat or canoe), as well as nature trails, picnic areas, and other recreational opportunities. With a lakeside trail, an area of conserved marshland, fishing possibilities, and more, the result is the feeling of a wilderness campground just outside of town. Also, this plan protects the original stream corridor from development; Wetlands Reserve Program incentives would be applicable.



Staging Plan:

The most important areas of the landscape design are in the rear of the property.

Thus, mining begins in the northwest corner (1) and moves inward according to the phase numbers. (Sub-phases represent areas where an island will be constructed by connecting back to a completed section.)

Planting along the perimeter of the lake will take place immediately upon completion of mining in that area.

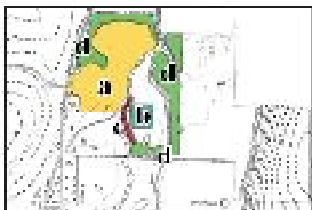
The final phase will be the mining of the marsh area, where depth is limited to 2 feet below water table to maintain a marsh habitat after completion.

Janiak Site: Banquet Hall and Nature Center



Design overview:

In addition to a banquet and function hall facility, providing a commercial focus to the site, this project uses techniques incorporating the gravel mining operation into the existing waterways to expedite the process and to leave a pair of ponds with a series of islands. These islands and ponds are then planted to create a variety of habitats and conditions which lend themselves to a nature center - golden weeping willows arching over the ponds, a boardwalk through a created wetland, willows and sycamores standing at the water's edge, wooded outdoor areas, paths using some of the gravel from the site, and so on. A large portion of the site is also maintained as active agricultural land, some of which could go to support the banquet hall and give it a unique flair.



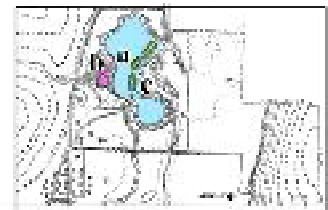
Stage 1:
a: Continue Dairy Farm
b: 5-Acre Mine
c: Berm for Mitigation
d: Reforestation Planting



Stage 2:
a: Begin Large Mine
b: New Access Road
c: Flood Initial Mine



Stage 3:
a: Complete Large Mine
b: Create Sledding Hill From Overburden
c: Begin Mine Flooding



Stage 4:
a: Complete Pond System
b: Construct Buildings
c: Create Path System

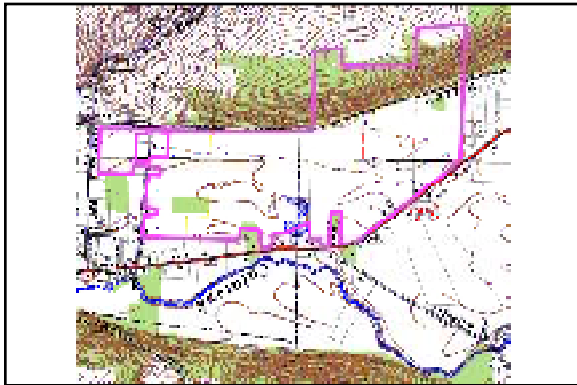
13: Good Design - Rautine Site

Site Introduction:

Arvo and Susan Rautine wish to continue farming on their 240 acres of land within the Main Catatonk Creek sub-watershed for as long as possible. When they retire, they hope to live on a portion of their property enjoying fishing with their grandchildren in the new ponds designed as part of this project. Development on the remainder of the land must be compatible with both their neighbors along their northern property boundary and with the larger Spencer community.

As the students learned, the site has a variety of characteristics suitable for a number of uses. About 35% of the site is good farmland, while the majority of the valley bottom land is underlain with gravel. The steep hillsides to the west are forested. At the foot of the hill is an active rail line, a significant factor to be considered in any design scheme. The property's road frontage is County Route 96, a high traffic corridor between Spencer and Ithaca to the north. Curb cuts and visual impact are, therefore, both important concerns.

Site Analysis:



Slope Suitability



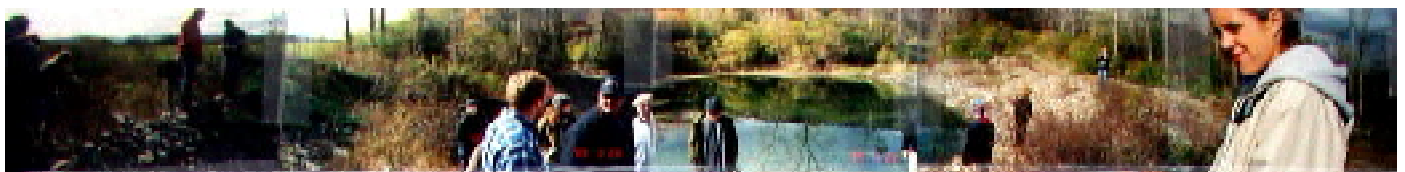
Soil Suitability



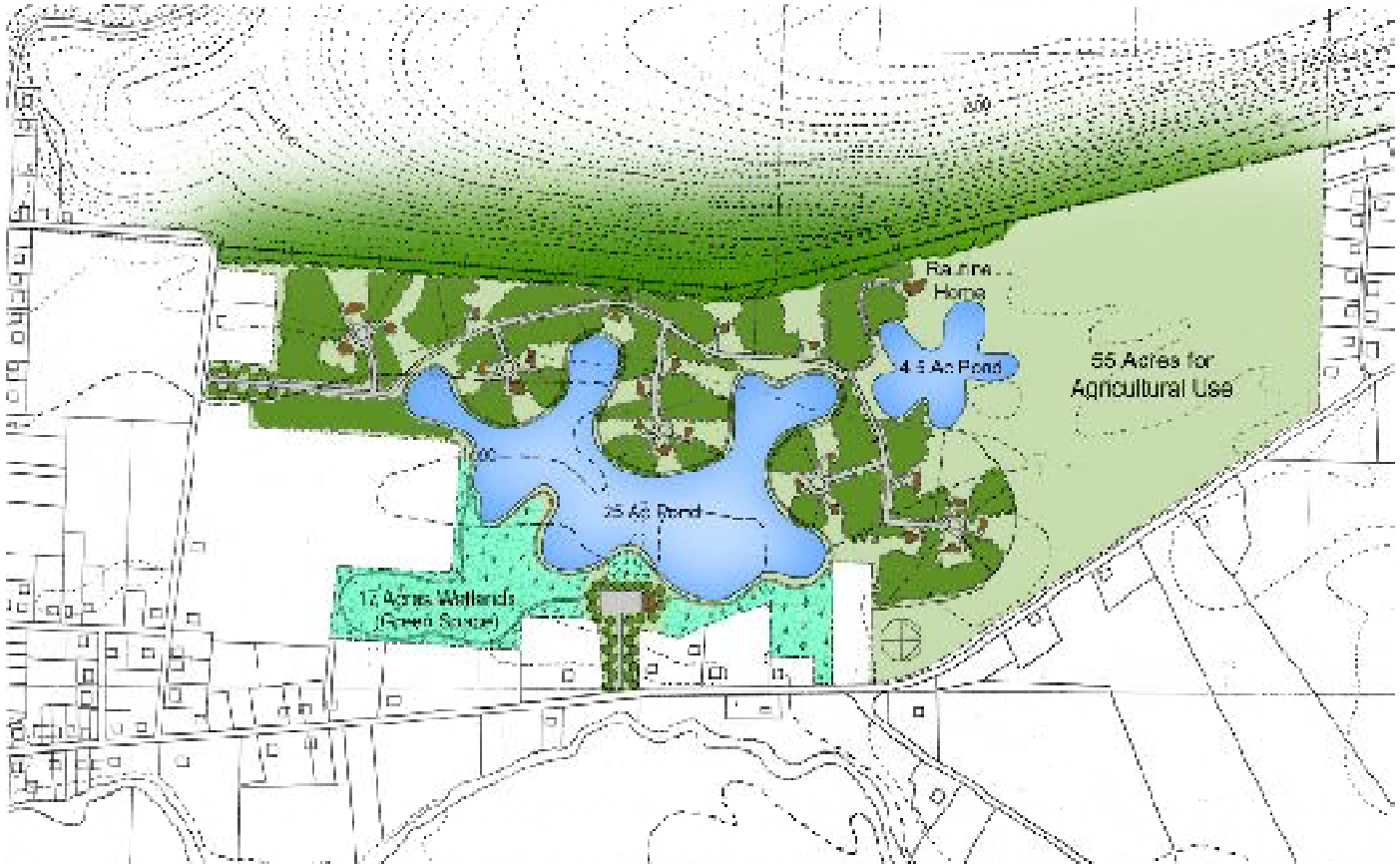
Significant Features



Site Photograph



Routine Site: Viewsheds and Greenspace



Design overview:

In addition to its nearly 30 acres of pond that are the product of the proposed gravel mining, this proposal includes a large tract of continued agricultural land connected to the proposed parcel retained for the Routines, which serve as a buffer from neighboring parcels. The Routine parcel also includes a private pond. The marshland is preserved and enhanced, framing a small park and community center, and lending privacy from the main road. The residential community is entered from an interior hamlet street rather than a new curbcut into the busy county road. Within the resulting neighborhood, the houses are carefully clusteres around cul-de-sacs to create a feeling of community in front while preserving individual, private viewsheds out over the ponds and the hills. From each home, vistas are carved through the woodland that present an uninterrupted view and a feeling of privacy and seclusion.



Stages of Development:

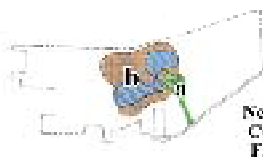
- a: Gravel Mine and Pond Creation for Routine Family Retirement Site
- b: Mass Plantings of Trees To Buffer Future Development (need time to mature)
- c: Gravel Mining and Pond Creation on Main Development Site
- d: Wetlands and Greenspace Creation
- e: Construction of Roads, Community Building, and Houses.

Routine Site: Art Park and Community



Design overview:

This proposal seeks not only to maintain the rural character of the site, but also to create a community-centered attraction. This is done by blending three major uses on the site – farming, a housing development geared toward retirees, and an outdoor sculpture park/restaurant – while balancing traffic across three main access points. The Art Park capitalizes on excess soil from gravel extraction by creating a landscape of hills, views and terraces as a setting for the outdoor sculpture. The 30 acre Art Park, managed by the homeowner’s association, buffers the community from the railroad. An Art Center and Restaurant serves as the staging point for the experience. Meanwhile the views from the 24 duplexes look out over the 40 acre lake at the park, enhancing their value and attractiveness while maintaining a tight, cohesive development on about 40 acres. The existing farm buildings and agricultural land is maintained through an easement creating a permanent green space of about 65 acres for the neighbors to the north. The new roads are parkways with heavy landscaping behind the existing properties on Route 96.



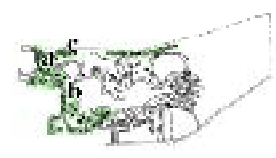
- Stage 1:**
a: Future Art Park Entry
b: Begin Gravel Mining & Overburden Placing



- Stage 2:**
a: Housing Dev’t Entry
b: Art Park Paths, Hills, and Sculpture (Begin)
c: Build Initial Roads/Pkg.
d: Expand Gravel Mining

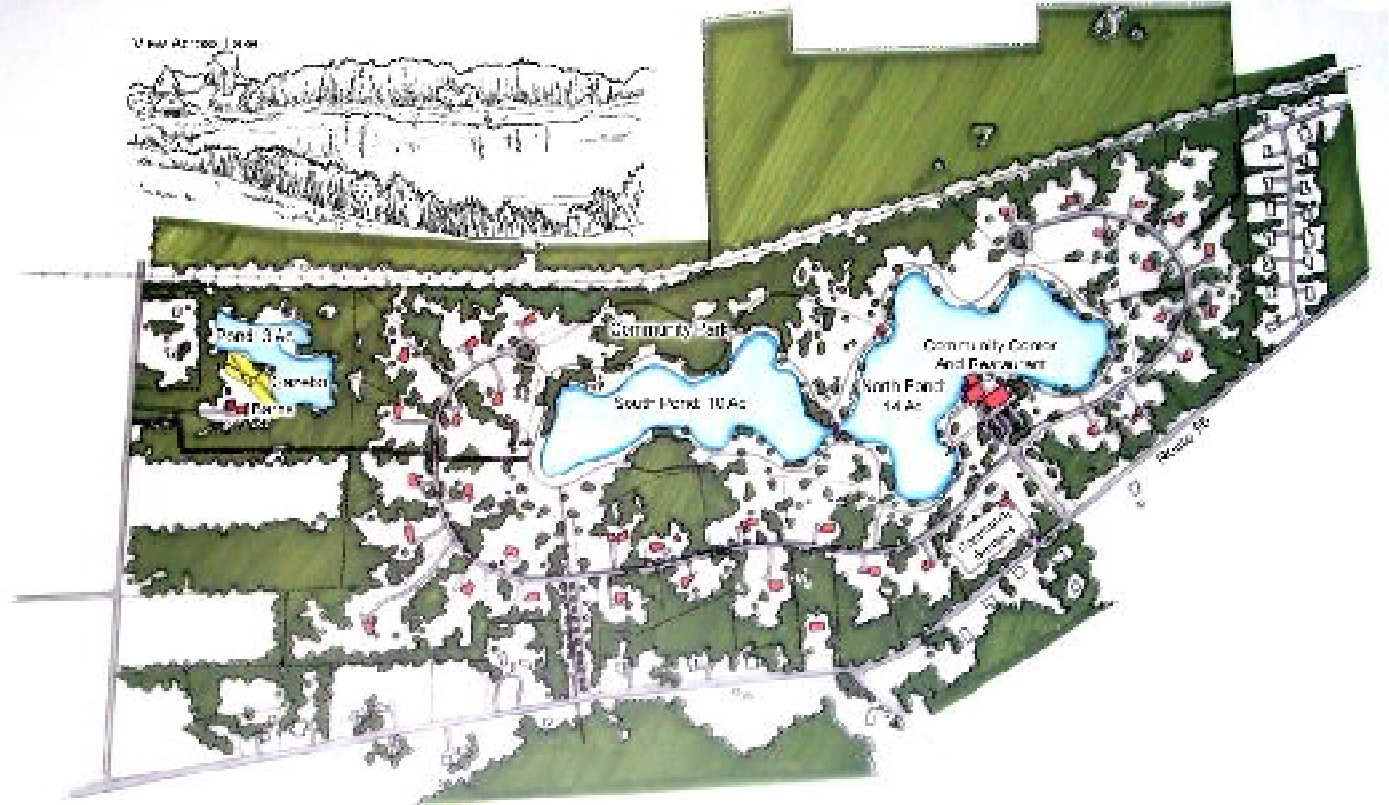


- Stage 3:**
a: Expand Art Park
b: Begin Building Homes
c: Build Second Road
d: Finish Mining



- Stage 4:**
a: Build Routine Estate
b: Finish Building Homes
c: Finalize Landscaping

Routine Site: Housing Conserving Greenspace



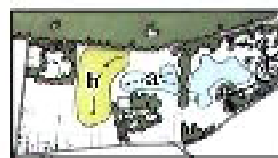
Design overview:

With an aim to create a buffer between a somewhat-dense development and its abutters, this plan reforests a large percentage of the site with new woodland. These created greenspaces are then protected by conservation easements in order to conserve a large portion of the unbuilt land. A path system connects the resulting residences and the woodlands together with the created ponds. The end result offsets density with privacy and create a “good neighbor” for the Routine’s retirement property in the south as well as the surrounding community. In addition, it encompasses a variety of lots with rural character and water views.



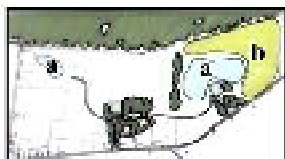
Stage 1:

- a: Construct Staging Areas
- b: Rough-Grade Roads
- c: Evergreen Tree Planting



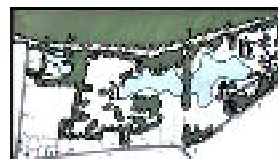
Stage 4:

- a: Begin South Lake
- b: Area for Overburden
- c: Sell lots and build roads and community features.



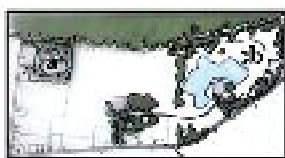
Stage 2:

- a: Begin Gravel Mining in North Lake and Routine Pond Areas.
- b: Area for Overburden



Stage 5:

- a: Plant and Finish Area Surrounding South Lake
- b: Sell remaining North Lake area lots



Stage 3:

- a: Construct Routine Home
- b: Plant And Finish Area Surrounding North Lake



Stage 6:

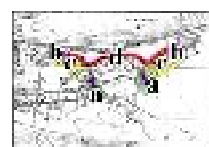
- a: Sell lots around South Lake; build road as necessary
- b: Create path system

Routine Site: Waterfront Property Development



Design overview:

Capitalizing on the attractiveness of water, this project proposes an extensive, dense development on the shores of ponds created by the gravel-mining process. At the several main entry points, strong, tree-lined boulevards create a sense of place and entry into a subdivision of winding streets where nearly every unit has its own unique water view. While the project results in a large amount of road per unit due to the single-loading of homes to the outer edges of the parcel and the long unused entry drives, the open waterfront space left by this choice provides a path and community park system that encompasses the pond edges and connects the units with greenspace easements. The setback of the houses from the property boundaries could be further enhanced by the creation of heavier vegetated buffers along the county road in the areas where lots back up to it; this would help buffer the surrounding community from such a dense development that is somewhat out of character for the area.



Stage 1:

- a: Staging Areas
- b: Begin Roads
- c: Tree Buffers
- d: Mine Future Routine Pond

Stage 2:

- a: Begin Mining
- b: Overburden
- c: Build Routine Retirement Home

Stage 3 :

- a: Plant First Pond
- b: Create Berms
- c: Mine 2nd Pond

Stage 4:

- a: Continue Plants
- b: Extend Roads
- c: Begin Lot Sales

Stage 5:

- a: Formal Entries
- b: Complete Roads
- c: Sell More Lots
- d: Begin Path and Park System

Stage 6:

- a: Finish Paths
- b: Sell Final Lots

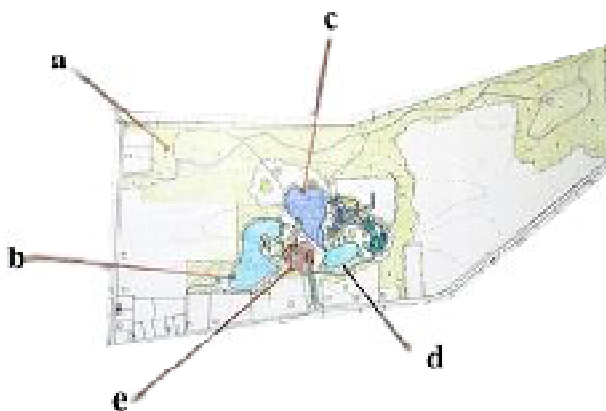
Routine Site: "Greenville": Sustainable Living Community



Design overview:

Through condensing the development and focusing on sustainable techniques, this project proposes a residential community with ties to the larger Spencer community. By efficient selection of building materials, design of cojoined houses, orientation for maximum solar exposure, plantings for shade in the summer and protection in the winter, and a focus on maximizing pedestrian paths and minimizing paved roads, the project presents a model for environmentally-focused design.

The footpath system forms a series of nature trails and connects the large, preserved greenbelts around the site to the rest of the town, providing for a possible continuity of open space. Finally, the gravel mines become ponds for added scenic value, habitat, and amenity.



Stages of Development:

- a: Begin Reforestation Plantings
- b: Dig South Pond Mine, and Begin Construction of Routine Residence
- c: Dig West Pond Mine, and Begin Construction of First Housing Cluster
- d: Dig East Pond Mine, and Begin Construction of Second Housing Cluster
- e: Build Restaurant Complex and Parking