Putting Ecological Considerations into Subdivision Review

You can, you know.

Funded through a grant from the Wellborn Ecology Fund

While zoning is most about the "what", subdivision is about the "where".

Through the regulating the placement lot lines; roads, utilities and buildings; and use of clustering and/or density requirements, rural-style subdivisions can still be done, preserving much of the value to the landowner (and maybe even increasing it), and also leaving large parts of the original parcel intact so that they retain their ecological value.

Where to begin?

- Subdivision, like zoning, begins in the Town Plan.
- The Town Plan should recommend adopting subdivision bylaws if you want to have them.
- Inventories and maps of natural resources should be included in the Plan.
- The Town Plan is where the community can provide background on the ecological value of wildlife and natural systems, and set policies on their protection to form the basis for later regulatory standards.

Wetlands

- In Vermont, only 220,000 acres (4% of the land area in the state) has been identified as wetlands on the National Wetlands Inventory Maps. ANR estimates that an additional 80,000 acres of wetlands exist in Vermont that have yet to be identified.
- State NWI maps are being updated and it is much easier now for towns to improve the state maps with additional mapping.
- More than 35% of the original wetlands in Vermont have been lost. Development is now the primary cause of wetland loss.

Wetlands provide many valuable and irreplaceable functions that benefit the public

- Surface and ground water quality maintenance
- Flood water storage and erosion control
- Threatened and endangered species habitat
- Open space, recreation and educational opportunities
- Fish and wildlife habitat

Riparian Buffers

These strips of grass, shrubs and trees along the banks of rivers and streams are **the single most effective protection** for our water resources in Vermont.

Riparian buffer functions include:

- Regulating stream flow
- Stabilizing stream banks and beds
- Filtering out sediment and pollution from runoff
- Providing wildlife and aquatic habitat
- Providing recreation and improving aesthetic values

Forests

Vermont's forests are valuable ecologically, economically and socially. Covering 75 percent of the state, forests provide jobs, stability to the landscape, wildlife habitats, biological diversity, clear water, scenic vistas and diverse recreational opportunities.

- Our clean air and water are in large part due to the filtering effects of trees above and below ground.
- Forests provide food, fuel and fiber.
- They create soil, cycle nutrients, sequester carbon and filter the air.
- Forests provide habitat for plant and animal life.
- Forests reduce the effects of drought, floods and severe wind.

Forest Fragmentation

The creation of gaps in the forest and barriers to wildlife movement results in the direct loss or inaccessibility of important habitat. The reduction in size of forest patches by roads and associated development can render the forest and other habitats unsuitable for certain species of native plants and animals.

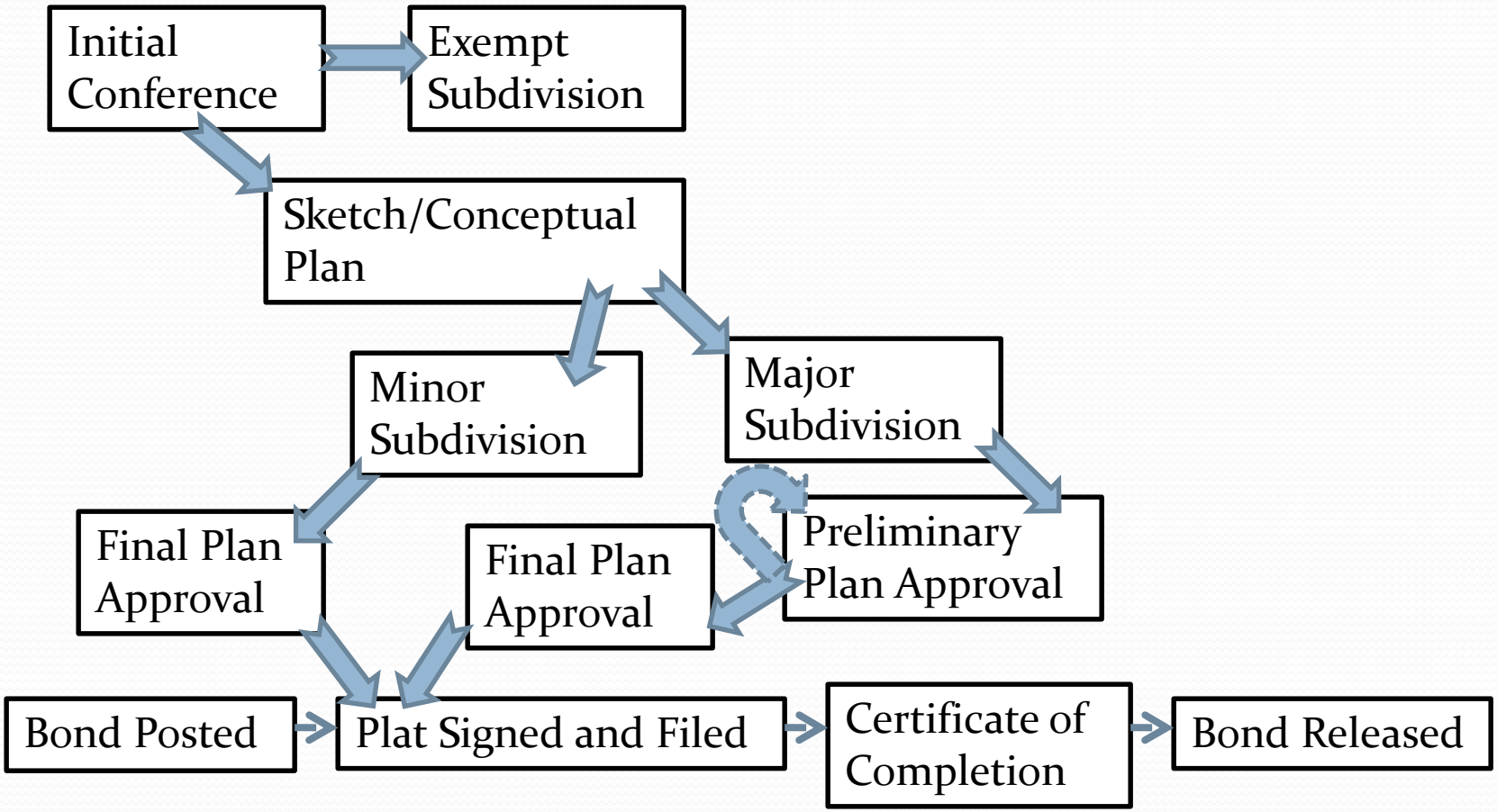
- Contiguous forest habitat supports the biological requirements of many plants and animals;
- Large tracts of forest supports viable populations of wide-ranging animals by providing travel corridors for genetic exchange and allowing access to important feeding and reproductive habitat.
- The smaller the habitat patch, the smaller the number of species that can occupy that habitat.
- Fragmentation can lead to increased predation, invasive species, vulnerability to natural disturbances. Fragmentation disrupts natural connections between habitats that are essential for the movement, and ultimately the survival, of many species of large, wide-ranging carnivores such as black bears, bobcats, and fishers.
- Even small mammals such as mice and shrews are adverse to crossing roads or paths just a few feet wide.

What is this Subdivision Bylaw, eh?

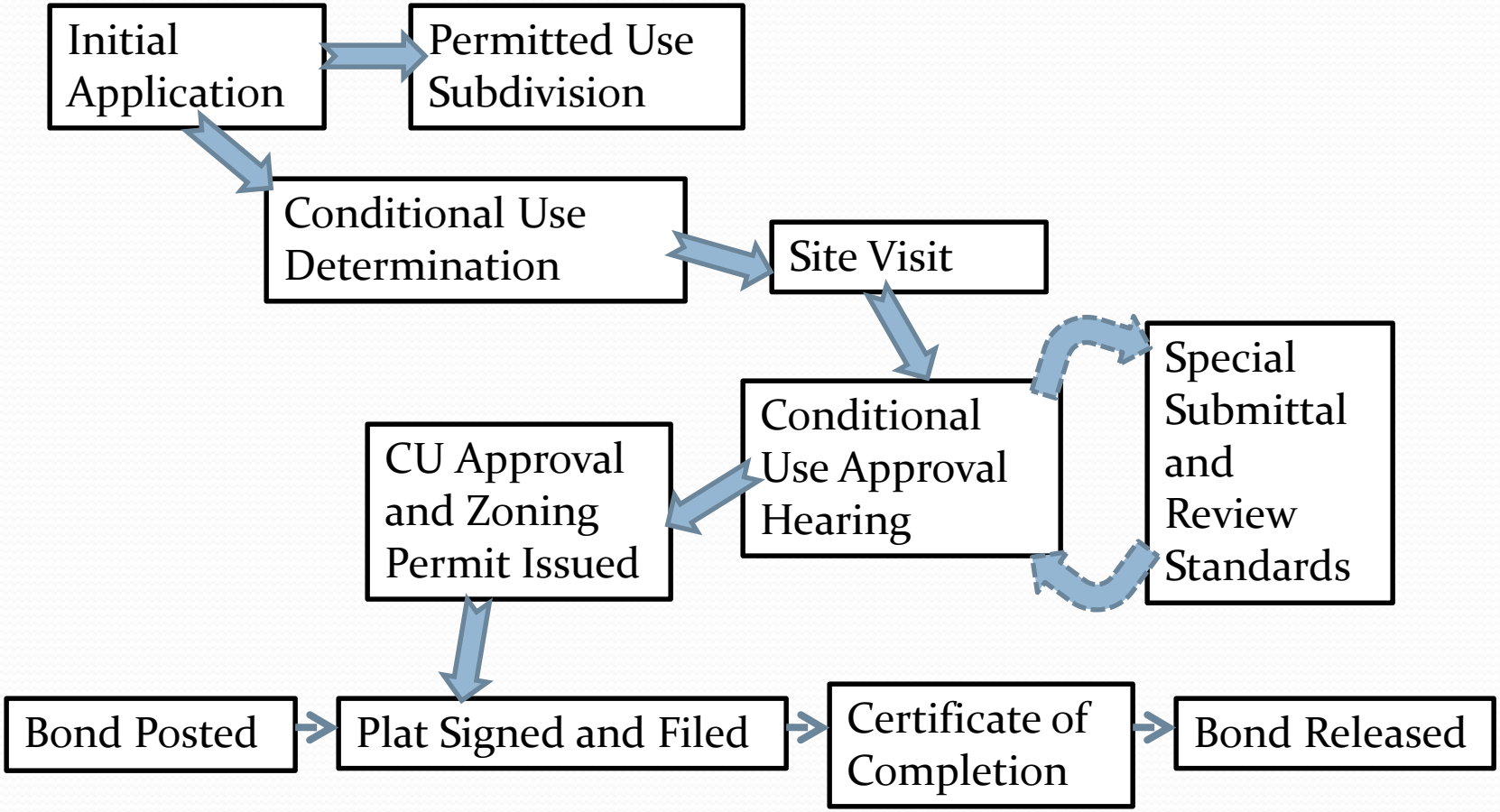
- Adopted and administered just like zoning.
- Can be combined with zoning in a "unified bylaw"
- Deals with "subdivisions", i.e. the creation of new property boundary lines and lots.
- Can be scaled so that it only kicks in at certain sizes, number of lots, pace of lots, etc.
- Can be done as instead with special standards under conditional use if needed.

NOTE: Towns with both zoning and subdivision become a "10 acre town" under Act 250 instead of a "1 acre town", unless the Selectboard resolves by ordinance to not have this occur. TRORC advises towns without planning staff to remain a 1 acre town.

Common Subdivision Processes



Subdivision as a Conditional Use



Subdivision Review

24 VSA Section 4418(1) requires municipalities that adopt subdivision bylaws to include:

"standards for the protection of natural resources and cultural features and the preservation of open space, as appropriate in the municipality."

Subdivision Review

In rural areas, regulating subdivisions is a BETTER WAY than regulating standard uses through zoning to ensure:

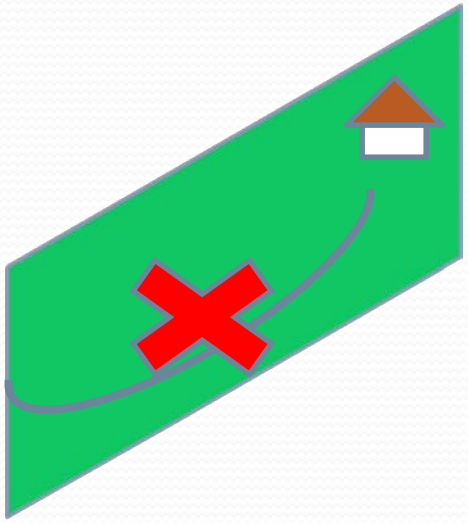
- proper road layout, access and transportation interconnections
- stormwater is well-managed
- lots are buildable
- land is not needlessly fragmented
- impacts to natural resources such as prime farmland, wetlands, critical habitat, etc. are reviewed

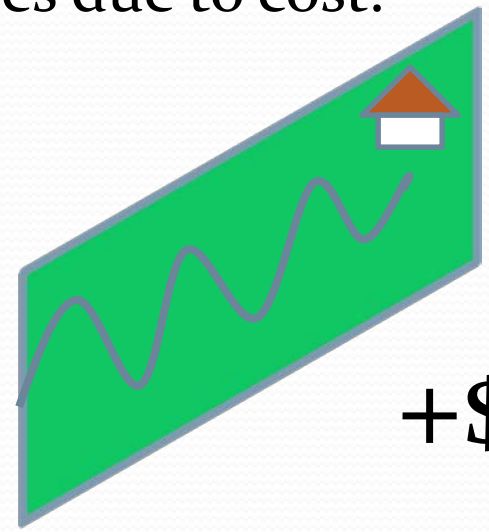
If you are only doing zoning, you are often too late to protect natural resources. Zoning deals with the cow once it's out of the barn.

Subdivision Review

Roads are your friend

- Prohibiting steep road slopes (typically no greater than 10-12%) should be standard in all subdivisions for safety purposes. It also effectively helps to limit construction on steep slopes due to cost.





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Road Standard Examples

Application Requirement Example

Applications must show existing and proposed roads and rights-of-way including widths, typical cross sections and longitudinal profiles.

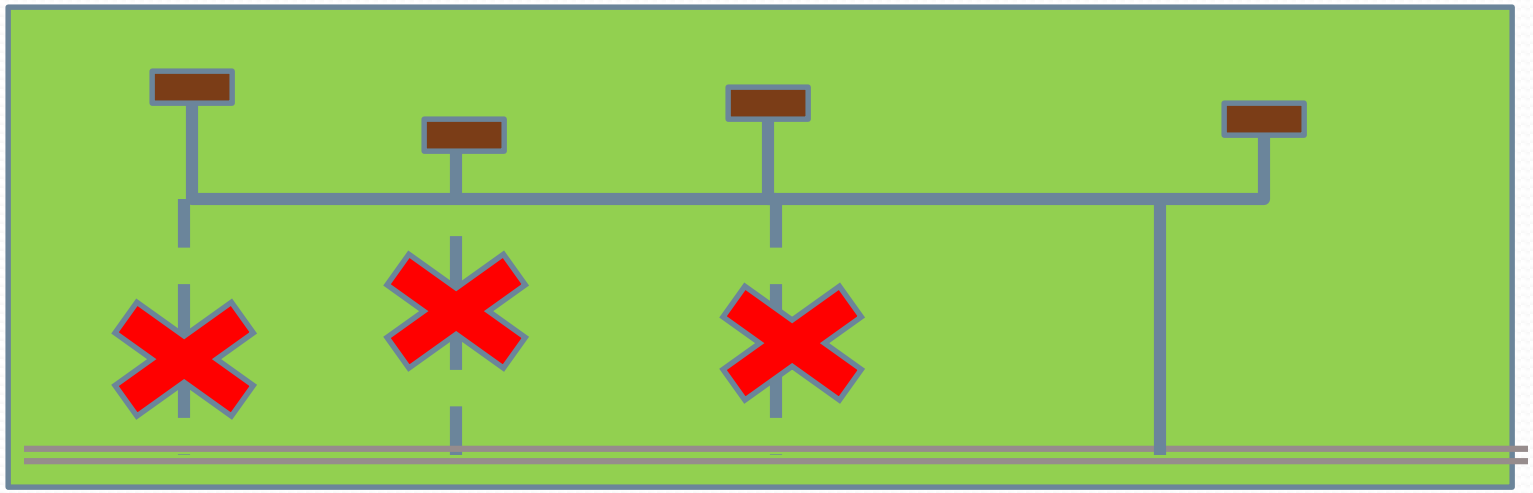
Roads and Rights-of-Way Standard Example

All new, or extensions of, private roads, whether or not intended to be taken over by the town, and new private access rights-of-way, shall be in compliance with town policies or standards without significant amounts of cut and fill and shall not exceed 12%.

Subdivision Review

Limiting access limits impacts

- Subdivision review can require a single access or minimization of accesses to keep traffic mobility, but it also helps to limit land fragmentation.



Road Standard Examples

Access Standard Example

Access to any lots within a subdivision shall be limited to a single shared access point, unless public safety is better served by two accesses or topography precludes single access. Any additional subsequent subdivision shall be restricted by permit to the existing access(es) point(s) as approved for the initial subdivision. Access points shall be on existing side roads when feasible.

Stormwater Management

Stormwater is often *the **major** source* of water pollution in Vermont. Poorly managed stormwater not only introduces pollutants into streams, but changes flood peaks and reduces aquifer recharge.

Sites disturbing more than an acre of soil need a state construction permit, and those that create more than an acre of impervious surface (including gravel roads) need a state operational permit.
http://www.anr.state.vt.us/dec/waterq/stormwater.htm

Stormwater Management = Water Quality Protection

Application Requirement Example

Applications must show existing and proposed forested areas, areas where the ground will be disturbed, and existing and proposed stormwater drainage and retention areas.

Stormwater Standard Example #1

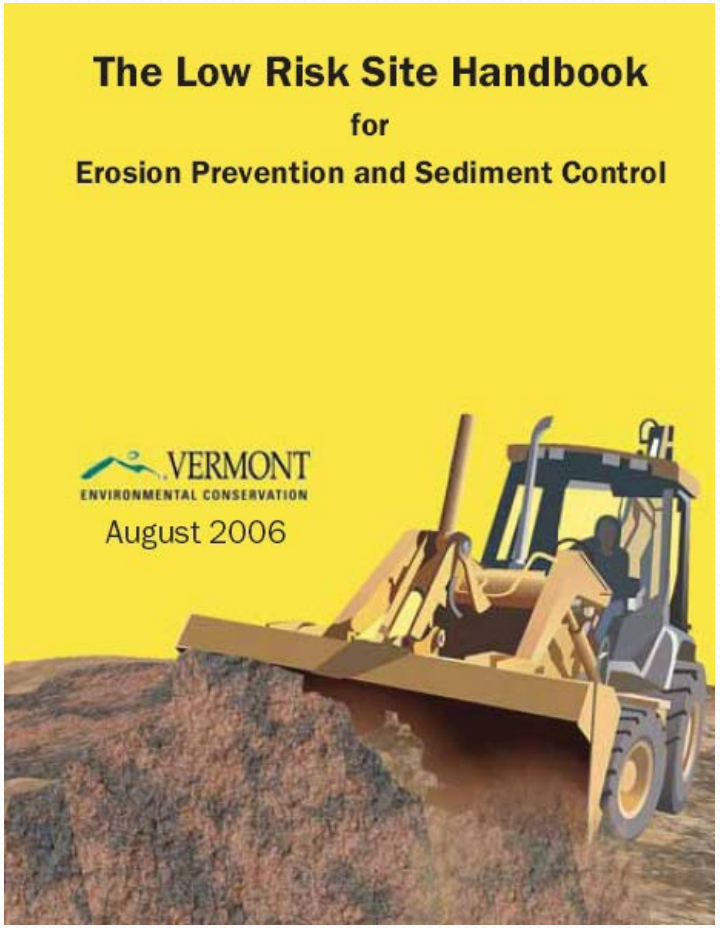
Stormwater shall be handled by an erosion control plan prepared by a licensed professional engineer for the subdivision for control of erosion, sediment and stormwater runoff during and following development. The proposal shall include any steps which the developer will take to control erosion and sediment run-off during development.

Stormwater Standard Example #2

The Board shall, when the characteristics of the land proposed to be developed may cause problems not anticipated by the developer's proposal, require that a professional engineer develop an erosion control plan for the subdivision. The Board may require phasing of construction to minimize the amount of land subject to erosion.

Stormwater Standard Example #3

All subdivisions disturbing the ground or involving construction shall, at a minimum, be required to utilize stormwater control measures contained in the Low Risk Site Handbook for Ersoion Prevention and Sediment Control.



Subdivision Review

Ensuring lots are created that are buildable will avoid conflicts later on in zoning, helping to avoid requests for variances, or just failure/inability to review impacts.

Three common factors affecting building:

- Slopes
- Wetlands
- Flood Hazard Areas

Overall Suitability

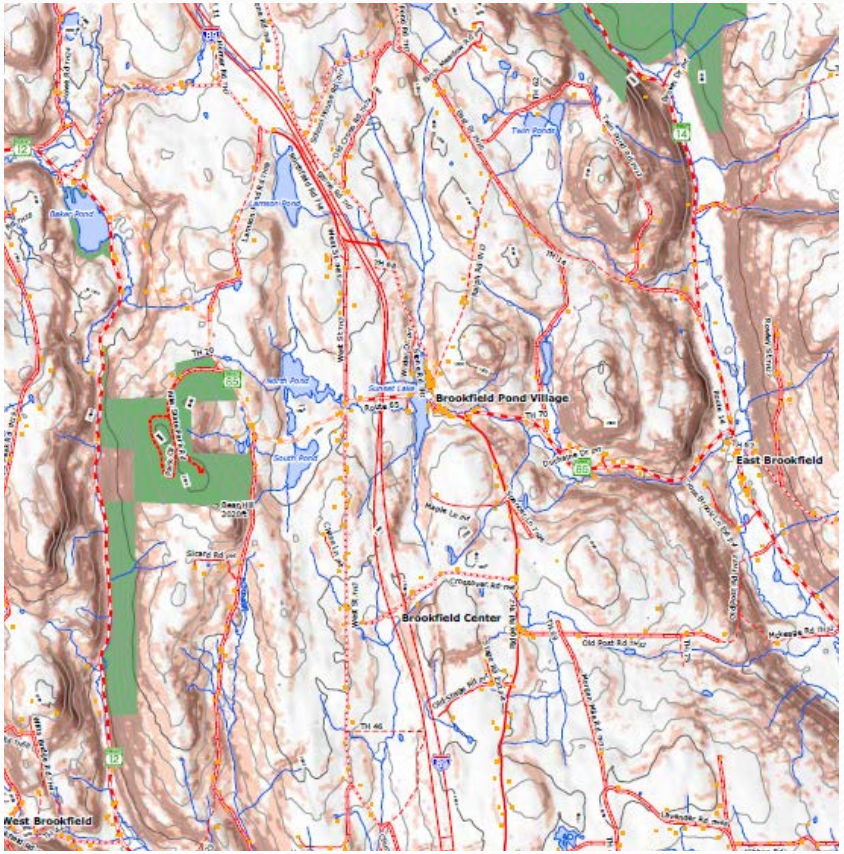
Development Suitability Standard Example

Land shall not be subdivided so that any lot consists of land designated as flood hazard areas , wetlands, or characterized by poor drainage, steep slopes, or subject to other hazardous conditions to the point where the lot is not buildable, *unless building has been restricted on the lot by easement*.

Slopes and Subdivisions

Keeping development off of steep slopes protects these areas, and also minimizes runoff problems that can pollute waterways.

Slopes are difficult to map <u>well</u> ahead of time. Town-wide slope maps are ill-suited for lot level use. Requiring contour data and having a good standard are best to address this issue.



Slopes and Subdivisions

Application Requirement Example

Applications must show the lots on a USGS contour map, and when required by the DRB, contour lines at an interval not greater than five feet.

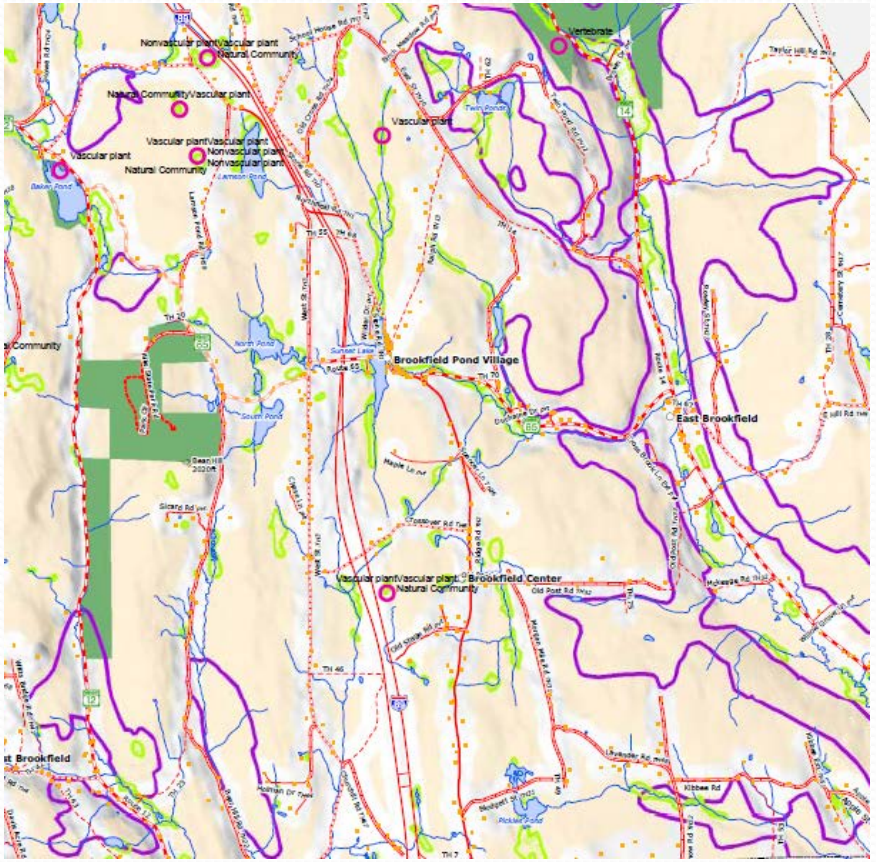
Slope Standard Example

Subdivisions shall be designed in reasonable conformity with existing topography to minimize grading, to reduce cuts and fills, and to retain, insofar as reasonable, natural contours, land cover, and soil. Projects proposing blasting, retaining walls or major modification of existing topography must show that there is no feasible alternative, and the Commission may require a program of landscaping, soil stabilization and the establishment of appropriate, permanent vegetative cover following excavation or grading.

No new slopes may be created with a slope greater than 1:3. Disturbance of steep slopes (over 25%) shall generally be avoided. Subdivisions on slopes over 25% may be required to be certified by a civil engineer that they will not pose a landslide or erosion risk.

Wetlands and Subdivisions

Keeping development out of wetlands protects these areas, but like slopes, wetlands are difficult to map <u>well</u> ahead of time. The NWI Town-wide wetlands maps are ill-suited for lot level use. Requiring wetland delineation data and having a good standard are best to address this issue.



Wetlands in Subdivisions

Application Requirement Example

Applicants shall be required to hire a qualified consultant to perform a wetland delineation in accordance with accepted Vermont protocols.

This can be lessened to "may" instead of "shall", be used only on lots containing a VSWI wetland, or only on major subdivisions , if the above is too strict for a town's taste.

Wetlands in Subdivisions

Wetlands Protection Standard Example #1

Class I and II wetlands, as identified and defined in the Vermont Wetland Regulations, shall not be drained, filled or altered to accommodate subdivisions. Proposals for land development, including land disturbance, within 100 feet of a Vermont regulated wetland shall be designed to provide for adequate setbacks, which shall be determined in consultation with the Vermont Agency of Natural Resources using the then applicable Vermont Wetland Regulations.

Wetlands Protection Standard Example #2

No building envelopes shall be within 100 feet of the top of bank of any perennial stream or the edge of any wetland, and no ground disturbance or removal of healthy vegetation will be allowed within 50 feet of such boundaries except for permitted crossings.

Development can be located by moving lot lines or by creating development "envelopes" to avoid impacts.

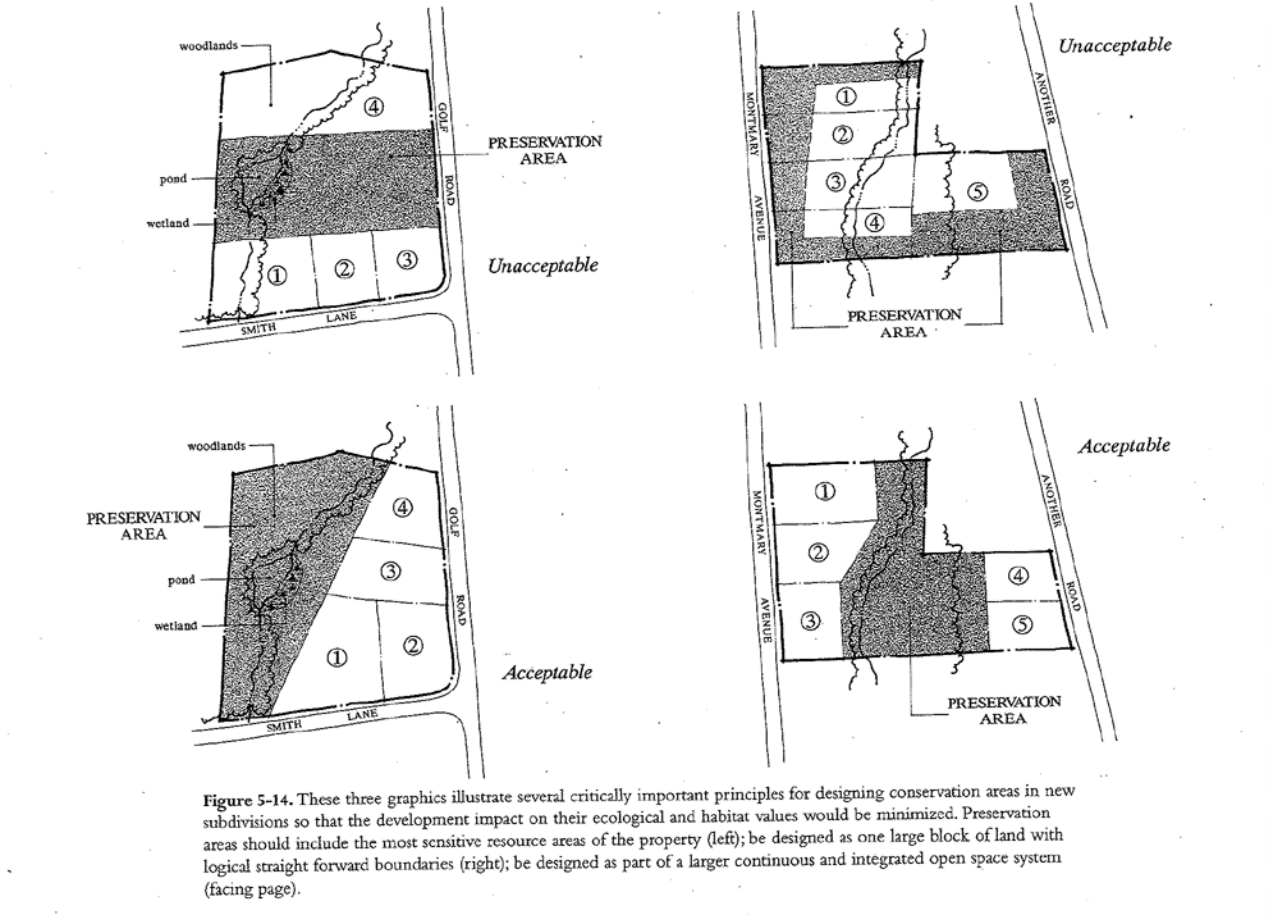


Figure 5-14. These three graphics illustrate several critically important principles for designing conservation areas in new subdivisions so that the development impact on their ecological and habitat values would be minimized. Preservation areas should include the most sensitive resource areas of the property (left); be designed as one large block of land with logical straight forward boundaries (right); be designed as part of a larger continuous and integrated open space system (facing page).

From Growing Greener: Putting Conservation into Local Plans and Ordinances by Randall Arendt, p. 76.

Flood Hazard Areas and Subdivisions

Flood Hazard areas are clearly (even if not accurately) mapped and mainly consist of flood plains and floodways. Restricting development in these areas is not only a matter of public safety, it also helps to keep rivers stable, absorb nutrients from runoff, preserve wildlife travel corridors and conserve floodplain plant species.

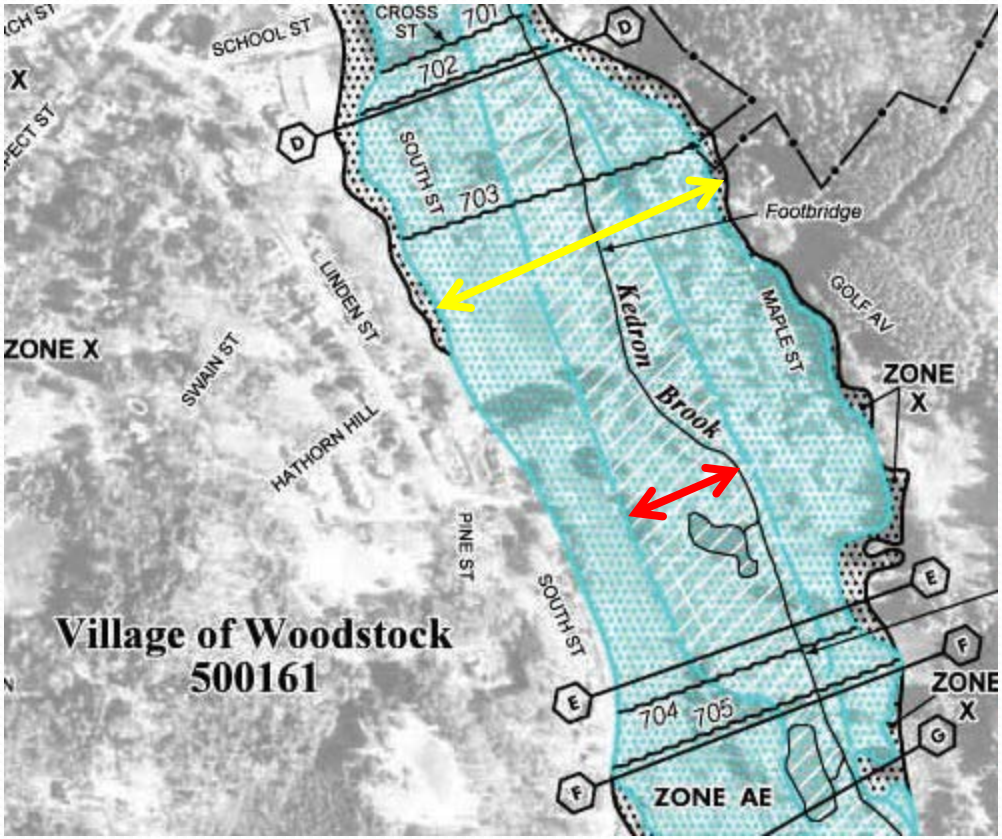
Floodways: the Death Zone

Floodway Development Standard Example #1

- Development, except for minor improvements to existing structures or relating to bridges, culverts, roads, stabilization projects, public utilities, or health and safety measures, within the regulatory floodway is prohibited.
- Junkyards and storage facilities for floatable materials, chemicals, explosives, flammable liquids, or other hazardous or toxic materials, are prohibited within the floodway.

Flood Plain (area of special flood hazard)

- Limit or prohibit filling
- Add stream setbacks for safety
- Prohibit placement of new buildings
- At-grade roads and other improvements permissible.



Flood plain

Floodway

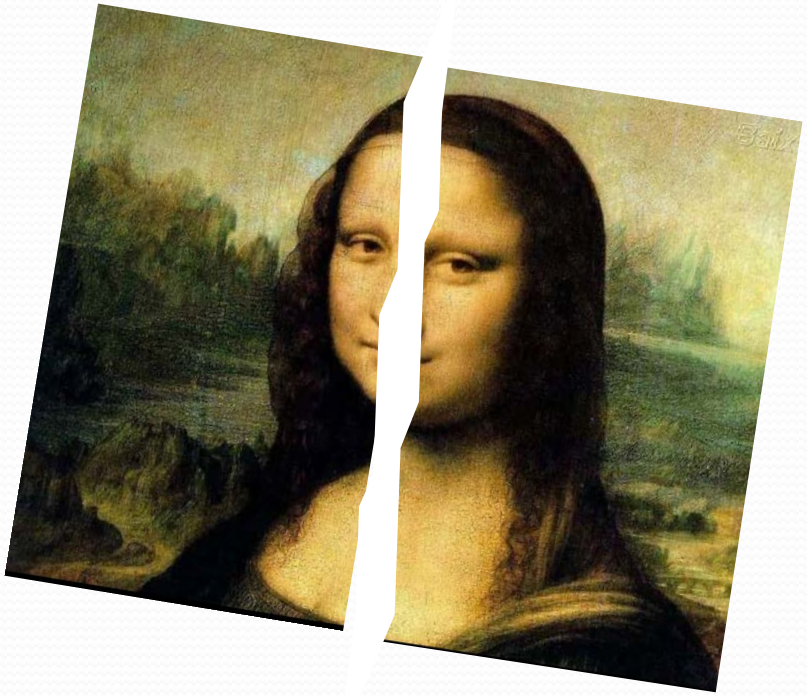
Fragmentation

. . . when larger parcels are divided and sold or transferred into multiple parcels, often through the process of subdivision, the result can be disjointed land ownership patterns that promote new housing and infrastructure development (roads, septic, utility lines, etc.). When this development occurs, it can fragment the landscape and negatively affect plant and animal species, wildlife habitat (called habitat fragmentation), and water quality.

From *The Final Report of The (Vermont) Roundtable On Parcelization And Forest Fragmentation*, May 2007.

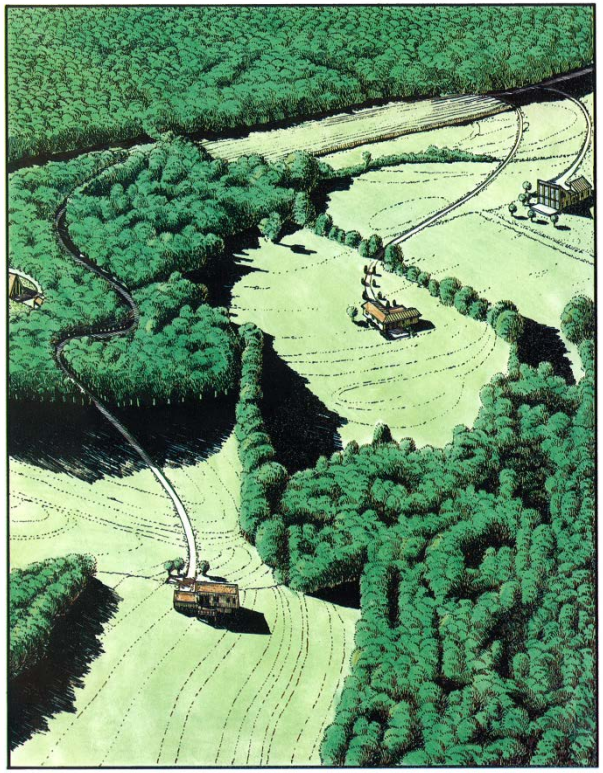
Fragmentation

Subdivisions always fragment land, but lot design can unnecessarily chop up land, limiting its future use for agriculture, forestry or conservation.

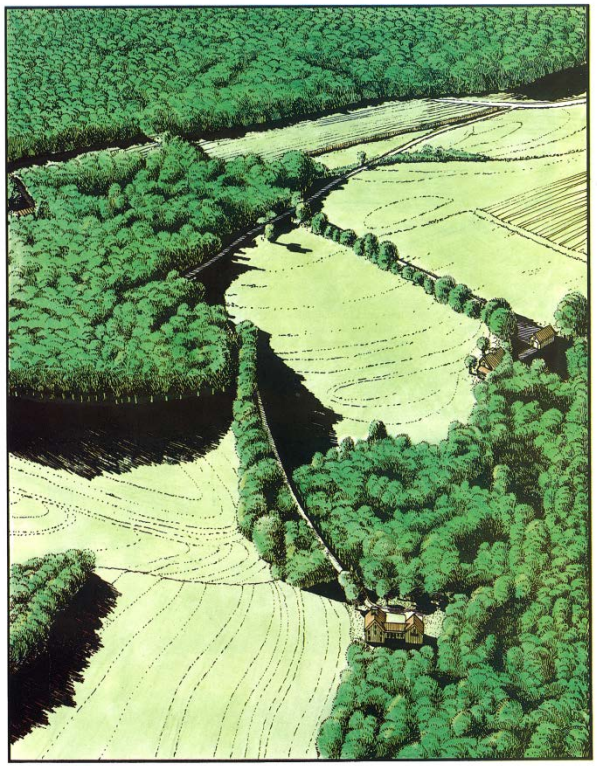


Graphics from Dealing with Change in the Connecticut River Valley: A Design Manual for Conservation and Development, by Prof. Robert Yaro, Randall Arendt, Harry Dodson and Elizabeth Brabec, pgs 52-3.

You can let them go here . . . or tell them they can't.



Aerial View of Site D After Conventional Development



Aerial View of Site D After Creative Development

From Randall Arendt's Rural By Design, page 21.

Lot line placement can be regulated. In this example the sensitive areas have been protected not only be permit or easement, but also by drawing the lot lines so they are best managed as a whole and protected. A building envelope approach would be the next best way to achieve this.

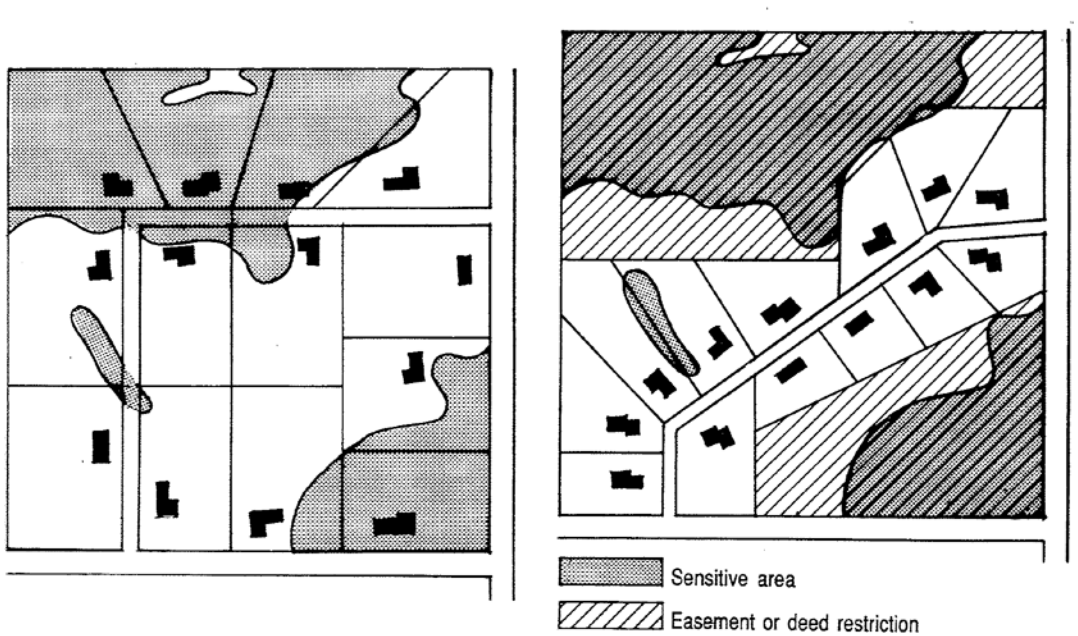
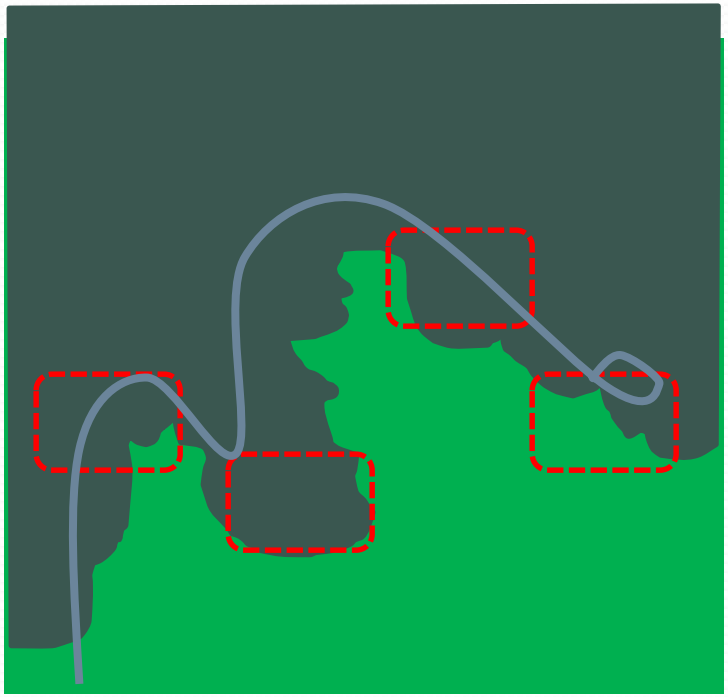


Figure 2–13. Conventional two-acre lot subdivision with homes located on sensitive but buildable land, compared with improved layouts protecting those resource areas, as encouraged by new regulations adopted by the Maine Department of Environmental Protection.

Envelopes

Building envelopes" can be used to approximately site structures. These should be flagged on the ground.



"Cut lines" or ground disturbance boundaries can be established. These should be flagged on the ground, especially large trees.

Fragmentation Standards

Fragmentation Standard Example #1

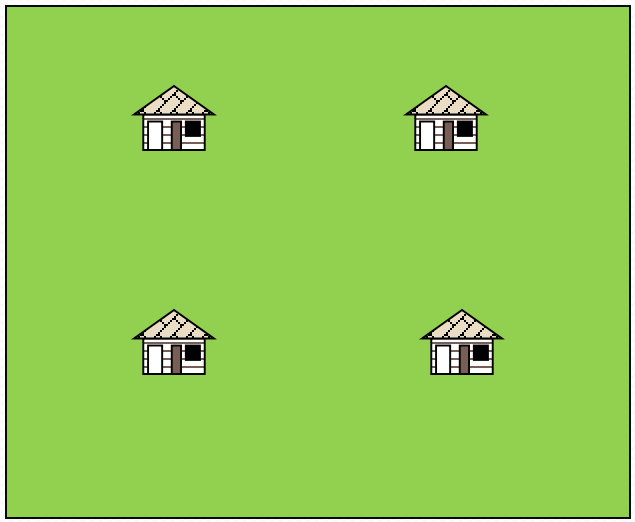
Subdivision of forest resource areas shall be permitted only where the Planning Commission finds that the subdivision has been planned to minimize the loss of forestry potential by providing for building densities, lot sizes, and the use of cluster planning designed to economize on the costs of roads, utilities, and land usage.

Fragmentation Standard Example #2

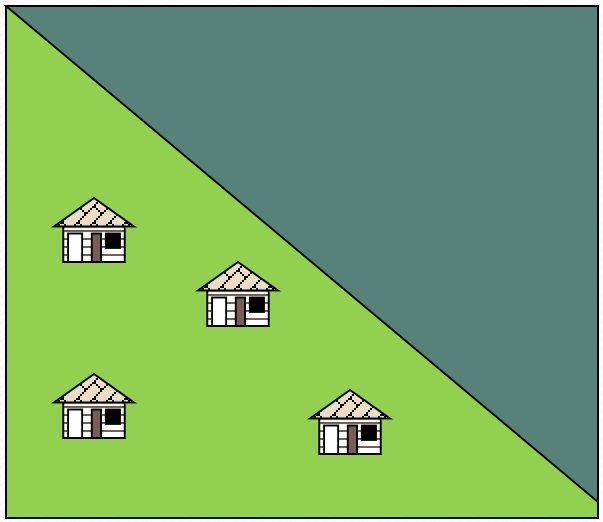
Conservation of Open Space – All major subdivisions in the Rural and Rural Residential Districts will be required to maintain at least 80% of the total acreage in contiguous (but not necessarily single ownership) and undeveloped acreage.

Clustering and Density:

- An idea that gives you the SAME number of buildings per original parcel, while not requiring large lots and ensuring the remainder stays undeveloped.
- Can lessen development costs and still preserve land value, while meeting conservation objectives.

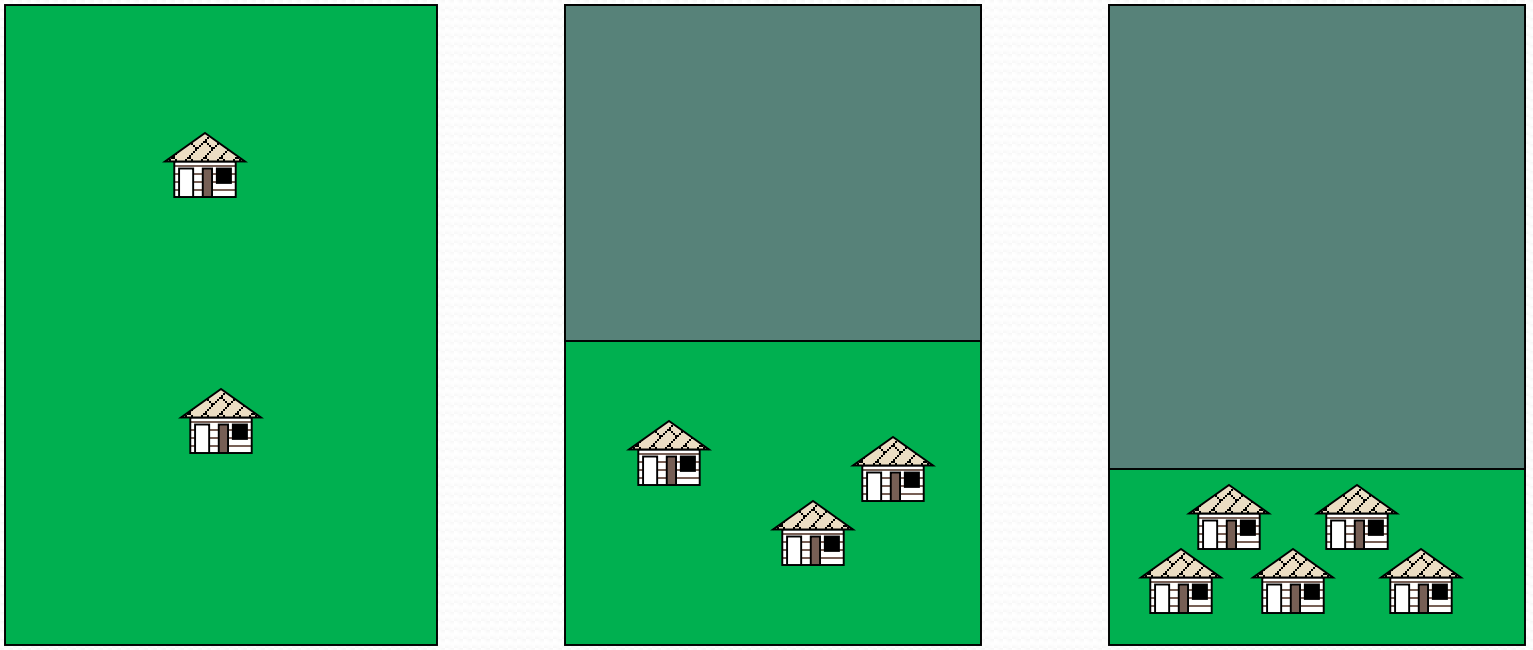


OR



Clustering and Density

- Bonuses can be added to make additional conservation even more attractive.



Protecting Other Ecological Values

- Deeryards, Natural Heritage Areas and Critical Wildlife Habitat can all be protected in the same way as forests (and often are forests). They can be mapped and then kept free from encroachment outright or have it minimized.
- Grassland habitat can be preserved through maintenance requirements that include annual fall mowing.

The Great "Takings" Pumpkin

Takings is much more of a threat than a reality if you are fair, have good standards and are careful.

- Leave a reasonable use, unless there is a clear hazard.
- Don't exact a public benefit, like a park.
- Give bonuses for conservation.
- Relate the restrictions to standards you have.
- If you are relying on poor maps, allow the applicant to develop better data.

Do you feel lucky?

Review your bylaw standards and permitting processes. Don't pretend you have a loaded gun for a bylaw, when you don't.

- Requirements are required, suggestions are not.
- Eliminate "encouraged", "when practical", etc.
- Use "minimize", "reasonable" and "avoid".
- Set limits that are easy to measure when you can.
- If you give yourself a power – "*the DRB may . . .*" – state how and when it will be used.

Case Study

How could the road, houses and lots be better placed?

Questions?

For additional information please contact us at:

Two Rivers-Ottauquechee Regional Commission

www.trorc.org

802-457-3188

Ecological Literacy Resources

Publications

- Chittenden County Natural Areas Planning Guide, Chittenden County RPC, draft July 2009.
- Conserving Vermont's Natural Heritage, Vermont Fish and Wildlife Department, 2004.
- Practical Ecology, Dan Perlman & Jeffrey Milder, 2005.
- Connecticut River Management Plan, Water Resources Plan, Upper Valley Section of the Connecticut River Joint Commissions, 2009.
- Visualizing Density, Julie Campoli and Alex S. MacLean, 2007.
- Rural by Design: Maintaining Small Town Character, Randall Arendt, 1994.

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