

## UNIT II - HOME AND FARMSTEAD PLANNING

### Lesson 1: Home Site Selection

**Competency/Objective:** Evaluate a site for a home.

#### **Study Questions**

1. How do soil and water conditions affect selection of a site?
2. How does topography affect planning for the home site?
3. How does wind affect planning?
4. How do services and utilities affect selection of the site?
5. What is the impact of regulatory agencies on planning for the home?
6. How do neighbors affect planning?
7. What are the implications of having the home and business on the same site?
8. What is the importance of conducting an environmental audit on a selected site?

#### **References**

1. *Agricultural Structures (Student Reference)*. University of Missouri-Columbia: Instructional Materials Laboratory, 1999, Unit II.
2. Activity Sheet
  - a) AS 1.1: Evaluating Home Sites



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#### TEACHING PROCEDURES

##### B. *Introduction*

Careful planning is involved in selecting a site for constructing a new home. Building in rural locations poses unique considerations. In order to have the best possible home when construction is completed, careful thought must be given to the selection of a home site.

##### C. *Motivation*

Ask students to imagine that the class will be building a project on a particular piece of ground next to the school. Students should be asked if it will matter where the building is built on that land. The class discussion can be centered on those factors that might influence the location of the construction project.

##### D. *Assignment*

##### E. *Supervised Study*

##### F. *Discussion*

1. Discuss what effect soil conditions and surface and subsurface water have on the selection of a site.

#### **How do soil and water conditions affect selection of a site?**

- a) Soil conditions
  - 1) The bedrock depth and soil type will affect foundation design decisions.
  - 2) A test should be done to determine the depth of bedrock formations or the underlying soil conditions at possible sites.
- b) Surface and subsurface water
  - 1) Any site with surface and subsurface water for more than half the year should be avoided if possible.
  - 2) A building site will be easier to work with and on if the location selected does not have subsurface water.
    - (a) Makes concrete work more difficult by increasing the moisture level in the concrete
    - (b) Makes sealing the building difficult, which will lead to water in the basement or crawl space
    - (c) Leads to mold, mildew, or rot in wood buildings.

- 3) If an entire plot has subsurface water, a drainage system may possibly be installed to remove the excess water.
2. Ask students to consider what the effect would be of building a home on top of a hill. Then ask them to consider what a home built in the bottom of a valley would be like. Would the homes have the same conditions?

**How does topography affect planning for the home site?**

- a) Topography - the relative positions and elevations of the natural or man-made features of an area that determine the surface configuration of the land
  - b) Hillside construction
    - 1) Construction will have higher costs because the need for retaining walls, grading, fill material, and general site preparation is greater in comparison to a flat site.
    - 2) Considerable amounts of soil may need to be either removed or brought onto the site.
    - 3) This process will require additional advance planning in securing a place to deposit excavated dirt or finding a source for dirt or proper fill material.
  - c) Water runoff
    - 1) Building a house at the bottom of a hill means that water will run down toward the house, possibly causing flooding or sub-irrigation problems.
    - 2) A home site should generally be located on a higher elevation than livestock facilities or crop ground where many chemicals are used in order to allow the water runoff to flow away from the site.
  - d) Amount of wind that strikes the home
    - 1) Homes built on hilltops or knolls generally receive more wind than those built on hillsides or at the base of hills.
    - 2) Natural growing trees or man-made windrows can provide protection from wind, but the topography may limit natural growth or make new trees hard to establish.
    - 3) Additional construction costs may be incurred to insulate and strengthen roofs and walls that are exposed to heavy prevailing winds.
  - e) Possibility of expansion
    - 1) If an addition onto the building may some day be necessary, careful consideration should be given to the initial site chosen for the building.
    - 2) Room needs to be left around the building, especially on those sides where additions may be built.
  - f) Building perspective, or view
    - 1) Building perspective is the direction a building faces in relation to the external scenery.
    - 2) If a scenic view is desired and offered by a certain direction, the view must be considered in laying out the building.
3. Another consideration in selecting a building site for a house is wind. Discuss the effect of wind on planning for the construction of a house.

### **How does wind affect planning?**

- a) Main entrance - commonly located on a side of the house away from prevailing winds
  - b) If the door faces the direction of the prevailing winds
    - 1) Rain, dust, and debris may blow into the house.
    - 2) The wind may cause damage when the door is opened.
    - 3) Snow drifts can also accumulate around the door and may make it inaccessible.
4. Every new building requires certain services and utilities. Ask students to describe how services and utilities can impact the selection of a building site.

### **How do services and utilities affect selection of the site?**

- a) The distance to services and utilities should be considered because it will affect the cost of bringing them to the home.
  - 1) It is desirable to build as close to existing roads and utility lines as possible, especially electricity, telephone, and gas lines.
  - 2) If the closest access is found at one corner of the property, the home may be placed closer to that corner.
  - 3) The local electrical power, telephone service, and natural gas suppliers may be contacted to determine the cost.
- b) If the location of the utilities is unknown, locator services can come to the property to determine the location.
  - 1) Using a locator service may reveal that some of the utilities already cross the property.
  - 2) By planning utility access, the builder can budget for the costs of bringing the utility to the building.
- c) Many rural homes make use of propane gas for heating or cooking.
  - 1) Tanks should be located so as not to detract from the home's appearance.
  - 2) They should be easily accessible for the propane supplier to refill.
  - 3) Propane suppliers will provide tanks, meters, and trenched-in connecting lines for an initial lease fee for their customers.
  - 4) Suppliers may provide footing blocks, or the home builder can pour a level concrete pad to set the tank on.
  - 5) Home owners are required to provide a stubbed-up exterior line that is securely capped or connected to the heating system and/or appliances.
- d) Drilling a well is often necessary for rural homes.
  - 1) State law requires all wells used for drinking water to be drilled to at least 80 feet to prevent groundwater runoff from directly entering the system.
  - 2) Knowing the average depth of drilling to reach quality water prior to selecting the site may influence selection.
  - 3) Drilling costs are based on the number of feet drilled and the soil structure where the drilling will be done.

- 4) To determine approximate drilling depth, homeowners should contact the Missouri Department of Natural Resources, Division of Geology and Land Services.
  - e) Several rural areas throughout the state have access to rural water districts.
    - 1) Water is purchased and piped from a nearby town or city's reservoir or well system.
    - 2) A homeowner can hook into this system for an initial fee and then purchase water based on usage on a monthly basis.
    - 3) Using a rural water district may be more cost efficient if the distance to the connection is fairly close and if the topography presents no major obstacles.
  - f) If sewer service is not available, the builder will need to arrange for a private sewage disposal system to be constructed.
    - 1) A large area of land and suitable soil is necessary to prevent contamination of surface water and wells.
    - 2) Septic systems should be located away from home and building sites.
    - 3) Local or county sewer regulations should be consulted before building to determine if a site is acceptable.
    - 4) Many counties will not allow a septic tank or sewer field to be placed within a certain distance of rivers or ponds.
  - g) Access to the site for concrete, lumber, and other material deliveries is important.
    - 1) Consideration should be given to where the roads currently are and where they will need to be built on the property.
    - 2) Roads and room for turning around should be provided.
    - 3) Time should be taken to consider where a lawn or any other landscaping will be prior to laying out the roads.
    - 4) Geomat is commonly placed on the ground to provide traction, if the site is wet and muddy.
    - 5) Bridges may need to be added to allow access.
5. Ask students what agencies may have control over where and how a house is built.

**What is the impact of regulatory agencies on planning for the home?**

- a) Fire codes and local building codes
  - 1) Fire codes may specify the distance from other buildings necessary to provide fire trucks and other emergency equipment access to the site.
  - 2) Common building codes include regulations for the reinforcement of concrete structures, service access, and utility access.
  - 3) An inspection is often required prior to beginning the project to make sure the building will be constructed according to code.
  - 4) For information about the codes for a particular area, the local building inspector or county commission can be contacted.
- b) Zoning laws

- 1) Many communities have zoning laws that prohibit the construction of private homes in areas that have been zoned for commercial development.
    - 2) The local zoning commission, building inspector, or assessor can usually identify local zoning laws.
  - c) County board of commissioners
    - 1) In a rural area, builders may only need to obtain permission for construction from a county board of commissioners.
    - 2) The amount of regulation will depend on the local area.
      - (a) In some places, sewer fields must be approved prior to construction, generally by a local or county sanitation board.
      - (b) Zoning laws have also become much more common in many agricultural areas.
6. Ask students how close their own neighbors are, and if problems with neighbors have ever occurred. Discuss the effects of building more houses in rural areas.

#### **How do neighbors affect planning?**

- a) Some landowners choose to build the home as far as possible from other neighbors to obtain greater privacy.
    - b) If neighbors are also relatives, some home builders may select a site that is relatively close to allow for more family interaction and promote a greater sense of security.
7. Ask students who live on farms what they think are advantages and/or disadvantages of having a home on a farmstead. Discuss factors to consider when deciding whether to have a home as part of a farmstead.

#### **What are the implications of having the home and business on the same site?**

- a) Possible sale of the home at a later time
  - 1) Many owners choose to sell an existing home to finance the construction of a new one.
  - 2) If the home is in the center of some type of business site, it may be difficult or impractical to sell.
  - 3) If the home is located on the edge of the property separate from the business, selling the home will be easier but will require accepting new and closer neighbors.
  - 4) Road access to the farming or business operation may have to be added, as well as connections to services and utilities.
- b) Excessive noise, traffic, or pollution
- c) Potential safety problems for the residents, especially children
  - 1) Agricultural operations use numerous pieces of equipment that are dangerous.

- 2) Many people prefer to locate the home away from more hazardous activities to help ensure the safety of children and visitors.
8. Ask students to list possible environmental issues that may affect the selection of a building site. Discuss the need to conduct an environmental audit. Have students complete AS 1.1.

**What is the importance of conducting an environmental audit on a selected site?**

- a) Environmental audit
  - 1) Examines the potential building site to determine if any environmental issues will need to be addressed prior to construction
  - 2) Can alert home builders to a number of potential hazards and what measures can be taken to eliminate any problems
- b) Potential problems
  - 1) Abandoned wells, especially on old farmstead sites
    - (a) Many old rock wells have been abandoned or even used to dispose of hazardous liquids.
    - (b) Even modern wells have been abandoned for rural water connections.
    - (c) A thorough environmental audit can help identify any abandoned wells through a study of county records of the property and a physical evaluation of the site.
  - 2) Identification of underground storage tanks, old landfills, or dump sites
    - (a) Underground tanks may have held substances like gasoline or diesel fuel.
    - (b) Landfills or dump sites could contain chemicals that are harmful to humans if they get into the drinking water.

**G. *Other Activities***

Obtain information from the local zoning or planning commission concerning legal issues affecting building homes in the local area. Allow students to evaluate the regulations and determine why they exist.

**H. *Conclusion***

When selecting a site for building a home, a number of issues should be considered prior to selecting the final site. These factors include topography, wind, services and utilities, regulatory agencies, neighbors, having the home and business on the same site, and environmental issues. By carefully considering these factors, prospective builders can select the ideal site that will eliminate or minimize problems later.

**I. *Answers to Activity Sheets***

**J. *Answers to Evaluation***



1. a
2. d
3. a
4. b
  
5. Answers may include any two of the following: future sale of the home; excessive noise, dust, or pollution; potential safety problems for residents, especially children, odors, fumes, dust, etc.
  
6. Underground tanks, abandoned wells, landfills or dump sites
7. To allow for more family interaction and promote a greater sense of security
8. Because the distance will affect the cost of bringing them to the home
  
9. Answers may include any two of the following: hillside construction, water runoff, amount of wind, possibility of expansion, and building perspective.



**EVALUATION**

**Select the letter that corresponds to the best answer.**

1. Which part of the house is usually considered when designing for wind?
  - a. Doors
  - b. Windows
  - c. Chimneys
  - d. Eaves
2. Many counties have limitations on how close \_\_\_\_\_ should be located to rivers or ponds.
  - a. Electricity
  - b. Telephone wires
  - c. Gas lines
  - d. Septic fields
3. An example of an agency that might be contacted prior to selecting a site is the:
  - a. Zoning commission.
  - b. County clerk.
  - c. Treasurer.
  - d. Weed control bureau.
4. What is one effect of subsurface water on a construction site?
  - a. Affects the size of the foundation
  - b. Makes sealing the building difficult
  - c. Limits the size of the home
  - d. Makes additional dirt necessary

**Complete the following short answer questions.**

5. What are two factors that should be considered when building the home on the site of the business?
  - a.
  - b.

6. What are three potential problems an environmental audit may discover about the land under consideration for building a home?
  - a.
  - b.
  - c.
7. Why might a builder choose to locate a home close to a neighbor who is also a relative?
8. Why should the distance to services and utilities be considered when selecting a site for a home?
9. What are two factors related to topography that will affect the selection of a site?
  - a.
  - b.

Lesson 1: Home Site Selection

Name \_\_\_\_\_

**Evaluating Home Sites****Objective:** Evaluate home sites according to the criteria discussed in this lesson.

**For this activity, select a home site found in the country, using either your own home or the home of a friend or family member. Evaluate the home site according to the criteria discussed in the lesson, noting what impact, if any, each of these factors had on the selection of the site.**

Location of home site: \_\_\_\_\_

FactorsDescription of the Site

Topography

Wind

Services and utilities

Neighbors

Home on business site

Environmental issues

In your opinion, why was the home constructed on that particular site?