Lagoon Requirements

SOILS EVALUATION RECOMMENDED IN PROPOSED LOCATION OF LAGOON

- A permit is required prior to construction**.**
- A soil morphology is recommended and may be required depending on the location of the site.
- Permits for lagoon construction associated with a building permit must be taken out at Resource Management, Boone County Government Center. The cost is $440.00. The permit may be taken out by the homeowner or contractor.
- Permits for home lagoon construction not associated with a building permit may be taken out at the Health Department, 1005 W. Worley. The cost is $440.00.
- Permits for existing system evaluation cost is $30.00. This permit is not for real estate evaluations.
- **ONLY** certified installers may install lagoons. A list of certified installers is available at the Health Department.

Lagoon Minimum Size - **all sizes measured at full operating depth**

- **1 or 2 bedrooms = 900 square feet surface area**
- **3 bedrooms = 1320 square feet surface area**
- **4 bedrooms = 1760 square feet surface area**
- **allow 440 square feet for each additional bedroom**

Lagoon Setbacks

- **75 feet from any property line as measured from the water line**
- **100 feet from the overflow pipe to the nearest property line over land**
- **200 feet from the nearest existing residence**
- **100 feet from the residence it serves**
- **100 feet from a well, potable water supply or pump suction line**
- **300 feet from any public water supply well (tank or disposal system)**
- **50 feet from a stream, water course, lake, spring or impoundment**
- **10 feet from any building or water line under pressure**
- **500 feet from any sink hole *(must be designed and certified by an engineer if in a designated sinkhole area)***

Heavy timber should be removed for a distance of 50 ft. from the water's edge to enhance wind action and prevent shading.

Guidelines for Individual Waste Stabilization Lagoons for a Residence

Site Selection

A waste stabilization pond can provide satisfactory sewage treatment in rural areas where soils are not suited for absorption systems. Single residence wastewater stabilization ponds are not generally suitable in subdivisions with lots less than three acres in size.

Ponds may be utilized when there are no significant limitations related to groundwater from their use and the soils have been demonstrated to be impermeable. There shall be a minimum separation distance between the pond bottom and creviced bedrock of three feet. **The administrative authority may require a soil morphology when soil conditions are not suitable or are marginal for installation of a lagoon.**

Selection of the pond site should consider a clear sweep of the surrounding area by prevailing winds. Heavy timber should be removed for a distance of fifty feet from the water's edge to enhance wind action and prevent shading. Steeply sloping areas should be avoided, with no slope greater than 15%.

Construction

The pond shall be designed on the basis of 440 square feet of water surface area per bedroom at the three foot operating level. Whenever the pond is preceded by a septic tank or aeration unit, the water surface area may be reduced up to a maximum of 20%; however, the minimum water surface area at the three foot level shall be 900 square feet. If a septic tank is used, schedule 40 pipe must be used 10 feet in and 10 feet out of the tank, the tank must be level, and there must be 2 access ports to the surface, one of which must be a manhole riser. The administrative authority may require that a properly sized and constructed septic tank or aeration unit precede the pond.

Embankments shall be constructed of impervious material and compacted sufficiently to form a stable structure with very little settlement. Soil for the lagoon should consist primarily of clay. Berms must be smooth and well compacted. The minimum width of the top of the berm shall be four feet. The embankment slopes shall not be steeper than three to one (3:1) on the inner and outer slopes. Inner embankment slopes shall not be flatter than four to one (4:1). Outer embankment slopes shall be sufficient to prevent the entrance of surface water into the pond. Freeboard shall be at least eighteen inches and preferably twenty-four inches. Additional freeboard may be provided.

Square or rectangular cells are considered most desirable. Rectangular cells shall have a length not exceeding 3 times the width. No islands, peninsulas or coves shall be permitted. The floor of the pond shall be stripped of vegetation and leveled to the proper elevation. Organic material removed from the pond area shall not be used in embankment construction. The wetted areas of the pond must be compacted to prevent excessive exfiltration.

Embankments shall be seeded with a locally hardy grass from the outside toe to one foot above the water line to minimize erosion and facilitate weed control. Alfalfa or similar long-rooted crops which might interfere with the water-holding capacity of the embankment shall not be used. Riprap may be necessary under unusual conditions to provide protection of embankments from erosion.

The minimum grade of pipe that may be used from the house to the lagoon is SDR 35. The line shall have a minimum diameter of four inches and be laid on a firm foundation at a minimum grade of 1/8" per foot. The influent line shall discharge as far as practical from the possible outlet side of the pond. A cleanout or manhole should be provided in the influent line near the pond embankment. A concrete splash pad 3 feet square should be placed under the terminus of the pipe. The elevation of the cleanout or manhole bottom should be a minimum of 6 inches above the high water level in the pond. The operating depth of the lagoon is determined by the outside elevation of the overflow discharge pipe. Cleanouts shall be

provided at least every 100 feet and at every change in direction or slope if the change exceeds 45 degrees.

Any effluent should be withdrawn from 6 inches below the water surface. This can be accomplished by placing a tee on the inlet end of a pipe or by placing the outlet pipe eight to 10 inches lower on the inlet end than the outlet end of the pipe. Effluent from a pond must be disposed of on the property from which it originated. This may be accomplished by locating the outlet as far as practical from the property line and out of any natural drainage ditches and swales. The minimum distance from the outlet to a property line shall be 100 feet. Another method is to construct a terraced swale – the overland flow minimum distance then becomes 150 feet.

It may be necessary to introduce water into the pond to facilitate start-up of the biological process; however, there shall be no permanent connection of any roof drain, footing drain or any source of rainwater to the wastewater stabilization pond.

Odor problems caused by spring turnover of water, temporary overloading, ice cover, atmospheric conditions or anaerobic conditions may be controlled by broadcasting sodium or ammonium nitrate over the surface of the pond. In general, the amount of sodium or ammonium nitrate should not exceed two pounds per day until the odor dissipates.

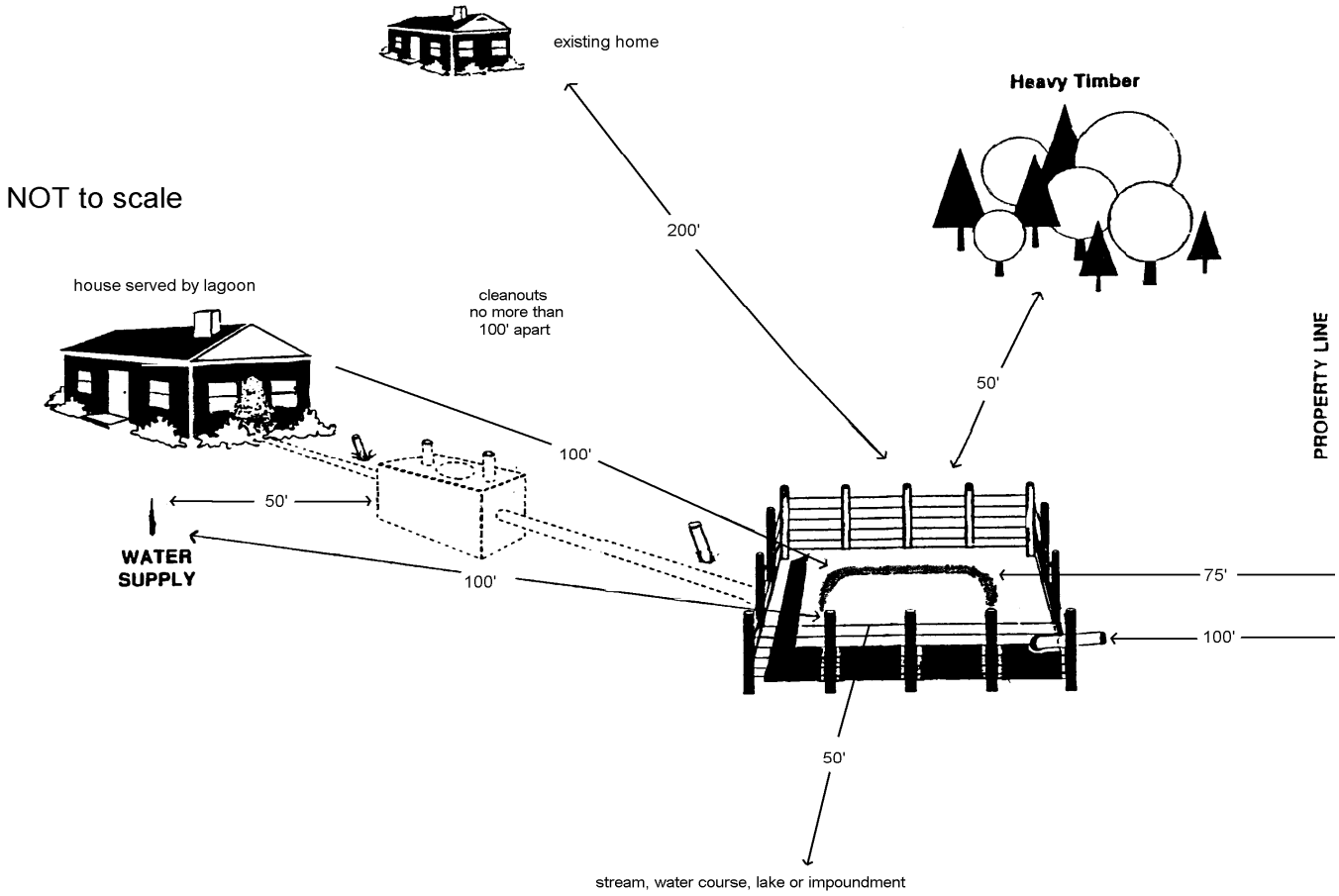
Fence Requirements

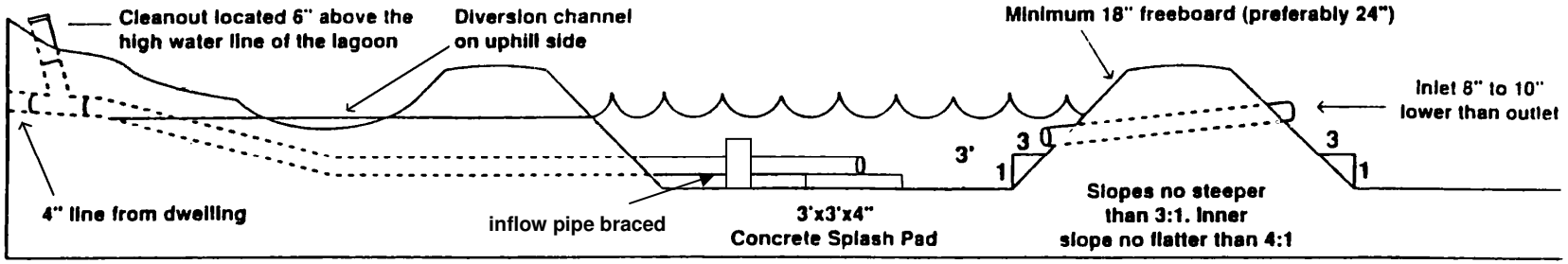
The pond area shall be enclosed with a 4 foot high woven or chain link fence to preclude livestock and discourage trespassing. The fence shall be so located to permit mowing of the embankment top and slopes. A gate of sufficient width to accommodate mowing equipment shall be provided. Appropriate warning signs shall be provided to designate the nature of the facility.

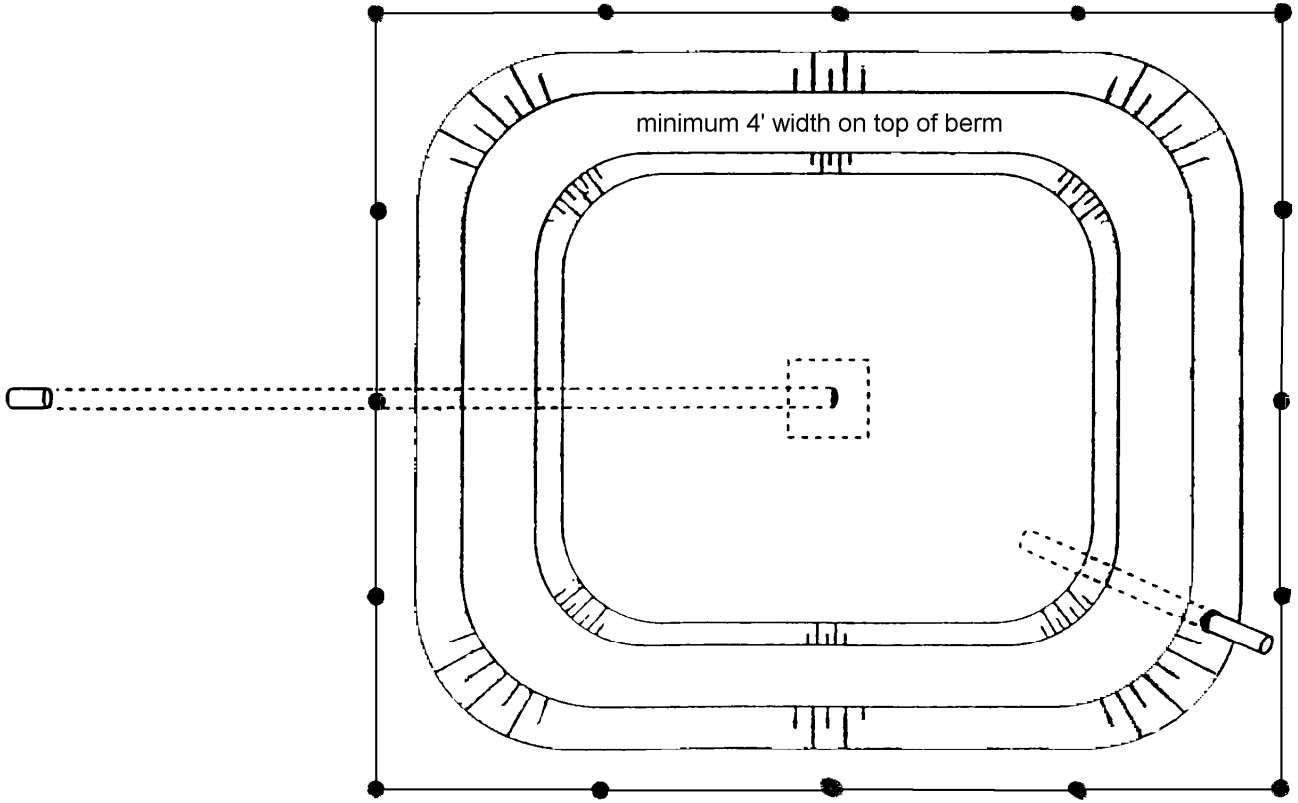
The lagoon fence shall be no closer than the center of the berm to the water's edge. The lagoon fence shall be of sound construction with no gaps or openings along the bottom. The fence shall be welded, woven or chain link material with no smaller than 14 gauge wire. Welded wire requires braced corner posts and a hinged gate. Fence posts shall be pressure treated wood, galvanized and/or painted steel. Fence posts shall be driven, tamped or set in concrete. Line posts should be at least 18 inches deep and shall be spaced no more than 10 feet apart. Corner posts should be at least 24 inches deep and shall be properly braced. Cattle panels can be substituted for welded, woven or chain link material.

A properly hinged 4 foot high gate of the same or comparable materials shall be installed and provided with an effective locking device. The gate should be 36" - 48" in width to accommodate maintenance and mowing equipment.

Fence must be completed prior to occupancy of dwelling.


existing home
Heavy Timber
NOT to scale
200'
house served by lagoon
cleanouts
no more than
100' apart
50'
PROPERTY LINE
100'
50'
WATER
SUPPLY
100'
75'
100'
50'
stream, water course, lake or impoundment





440 square feet of water per bedroom at 3 foot operating level but never less than 900 square feet.