

## 2018 MN State Envirothon Scenario Grazing Lands in Minnesota

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Grazing lands in Minnesota provide numerous benefits ranging from economic to environmental. In addition to providing forage for livestock, grazing lands can also provide wildlife habitat, protect soil from erosion, and protect water quality. It is imperative that sound land management practices are followed given the need for productive grazing lands as well as the emphasis that Minnesota residents have put onto protecting water quality and our natural resources.

The Envirothon Land and Cattle Company (ELCC) in Minnesota is looking for assistance to better manage their land resources. Over the past several years, the cost of winter feed and land have increased drastically, cutting into the profits of the operation. As a result, the owners are looking for ways to improve their pasture management and production, which will extend their grazing season, lower the amount of stored feed they need to provide, and may allow them to increase stocking rates in the future.

The herd consists of 250 beef cow/calf pairs grazing on 740 acres of existing pasture. The cows calve in the spring, and the calves are sold in the fall. The pasture contains a mix of well drained soils, poorly drained soils, and wooded areas (refer to the “Existing Infrastructure” map and the “Soil Conditions” map for further detail). The well drained areas consist of sandy loam soils, which are drier soils that are prone to drought. The vegetation in the well drained areas consists of cool season grasses (mainly bluegrass, with some timothy and smooth brome) and scattered red and white clovers. The poorly drained areas are typically wet in the spring, but dry out by midsummer and provide good grazing opportunities by early-midsummer. The vegetation in the poorly drained areas consists of a mix of introduced and native grasses (timothy, redtop, reed canary grass, sedges, prairie cordgrass), with scattered red clover and white clover.

Two drainage streams flow through the pastures, which lead to a designated trout stream within a mile of the property. The owners of the ELCC have reported seeing trout in the streams in the pasture. Currently, the streams are relied upon as water sources for the livestock, resulting in some areas of bank erosion due to the livestock traffic while watering. Water quality is a major concern of surrounding citizens as well as the owners of the operation. In conjunction with increasing pasture production, the ELCC would like to better manage the sensitive resources on the farm while still being able to utilize them for grazing.

The current management system in place on the ranch does not provide enough forage for the herd, and the operators have to start feeding in August. By the end of the season, the pastures are overgrazed, causing the most desirable plants to be weak and unhealthy as well as increasing the risk of negative impacts to water quality and soil erosion. They have an additional 100 acres of cropland that they would like to convert into pasture to extend the length of their grazing season into October. They also have another 100 acres of cropland that they would like to fence, which will allow them to graze the last growth of the hay fields or the crop residues after grain harvest. With the additional acreage, the operation should be able to meet its forage production goals; provided that they also implement better grazing management practices.

Currently, the grazing system is divided into two large pastures. The herd grazes each pasture for one month before moving to the other pasture. The water sources for the herd consist of several ponds scattered throughout the pastures as well as the streams. The ELCC has had herd health problems in the past as a result of poor water quality during the summer from the surface water sources and want to explore alternative options for watering the livestock. A well with excellent water supply and quality is available for use at the building site located on the east side of the pasture (see the “Existing Infrastructure” Map).

The ELCC would like to graze the crop stubble on the field in the northwest corner of the property, but the only water supply is the nearby stream, which is spring-fed and stays unfrozen during the winter months. They have been using this stream as the water source and the cattle have a designated place to cross/drink where the stream meets the north property fence. Water quality and bank erosion are concerns of the operators, but need to use this as a winter water source because it would be cost-prohibitive to develop another water source. They are looking for ways to minimize any negative impacts to the stream banks and water quality while still being able to use this as a water source during the winter. The ELCC would also like to utilize their other crop fields (Crop Field 2) in the late fall/winter to increase the total number of days of grazing for the herd.

Other aspects of the operation that the ELCC would like to improve include their fertility and weed management programs. Currently, they have not been managing fertility on a consistent basis, which typically involves spreading manure on the pasture periodically. The pastures do not have much weed pressure, but they have started to see plumeless thistle move into the well drained areas of the pasture. They would like to know what control options are available to keep this weed and other weeds from spreading across the entire operation.

### **Expectations**

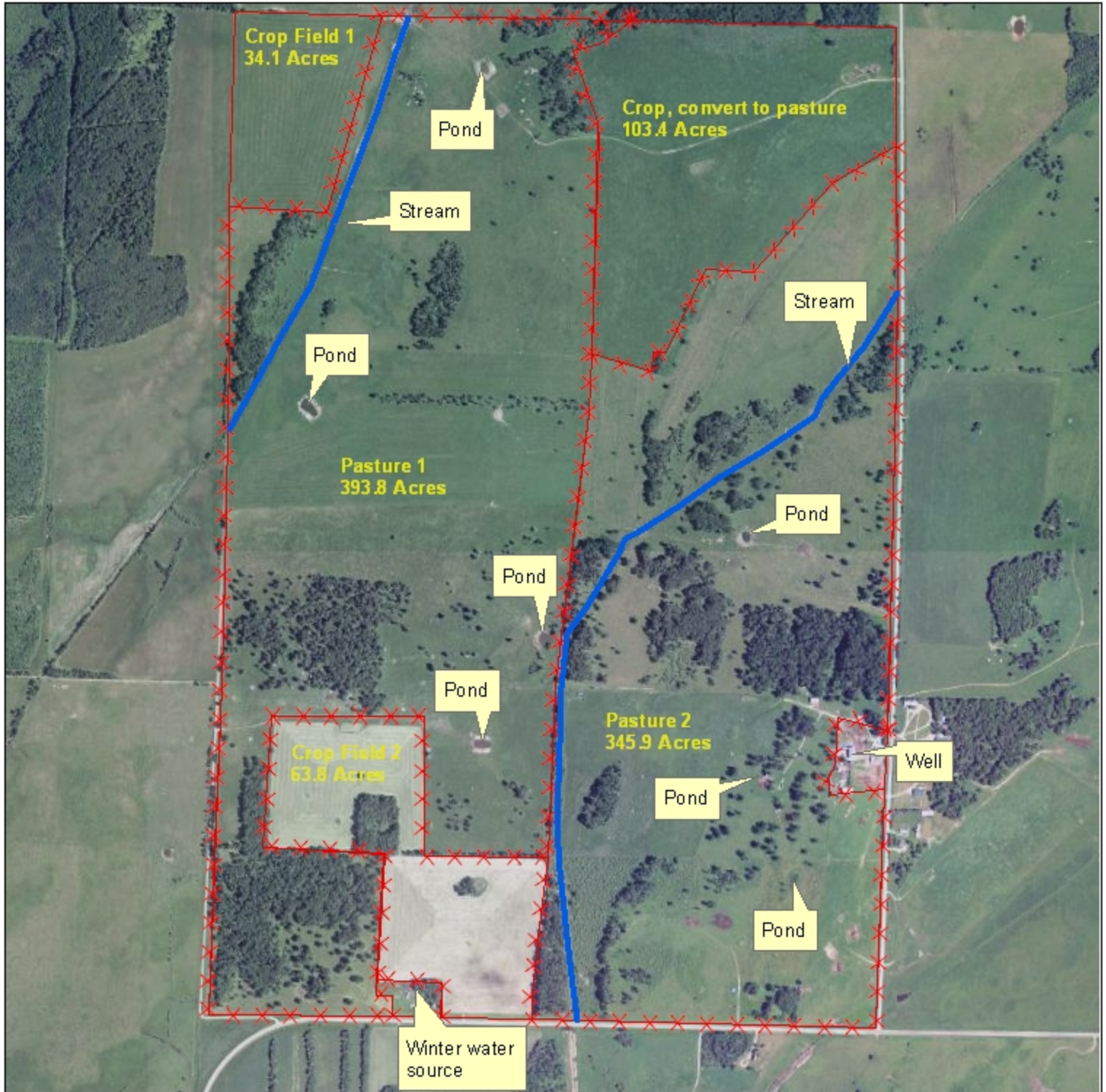
The ELCC has contracted you to put together a management plan that helps address their production and resource goals. As a part of this plan you will need to:




1. Develop a grazing management plan that better manages the forage resources (see the ELCC maps: Plan Map, Existing Infrastructure, Soil Conditions, and Topography). As a part of this plan, you will need to mark on the Plan Map where additional infrastructure (fencing, watering systems, stream crossings, etc.) will be needed to better manage their resources (Use the “Plan Map” as your template to draw on).
  - a. The plan should also include the estimated grazing period lengths and amount of rest needed between grazing periods.
2. As a part of the grazing plan, identify management techniques that will help protect water quality and improve fish habitat in the streams.
3. Identify ways to manage the sensitive features on site.
4. Develop a winter water solution in the northwest corner of the property, which will allow the ELCC to graze Crop Field 1.
5. Integrate the other cropland areas (Crop Fields 1 and 2) into the management system.
6. Provide general information on developing a fertility management program.
7. Provide general information on developing a weed control program.

## Resources

- Grazing Systems Planning Guide
- <https://www.extension.umn.edu/agriculture/dairy/grazing-systems/grazing-systems-handbook.pdf>
- Managing Grazing in Stream Corridors  
<http://www.mda.state.mn.us/news/publications/animals/livestockproduction/grazing.pdf>
- Caring for the Green Zone: Riparian Areas and Grazing Management  
<http://cowsandfish.org/pdfs/greenzone3rd.pdf>
- Managing Soils for Greater Grazing Productivity  
<http://www.mda.state.mn.us/news/publications/animals/livestockproduction/managingsoilsforgrazing.pdf>
- Improving and Sustaining Forage Production in Pastures  
<http://www.mda.state.mn.us/~media/Files/animals/grazingimprove.ashx>

# Envirothon Land and Cattle Company: Existing Infrastructure

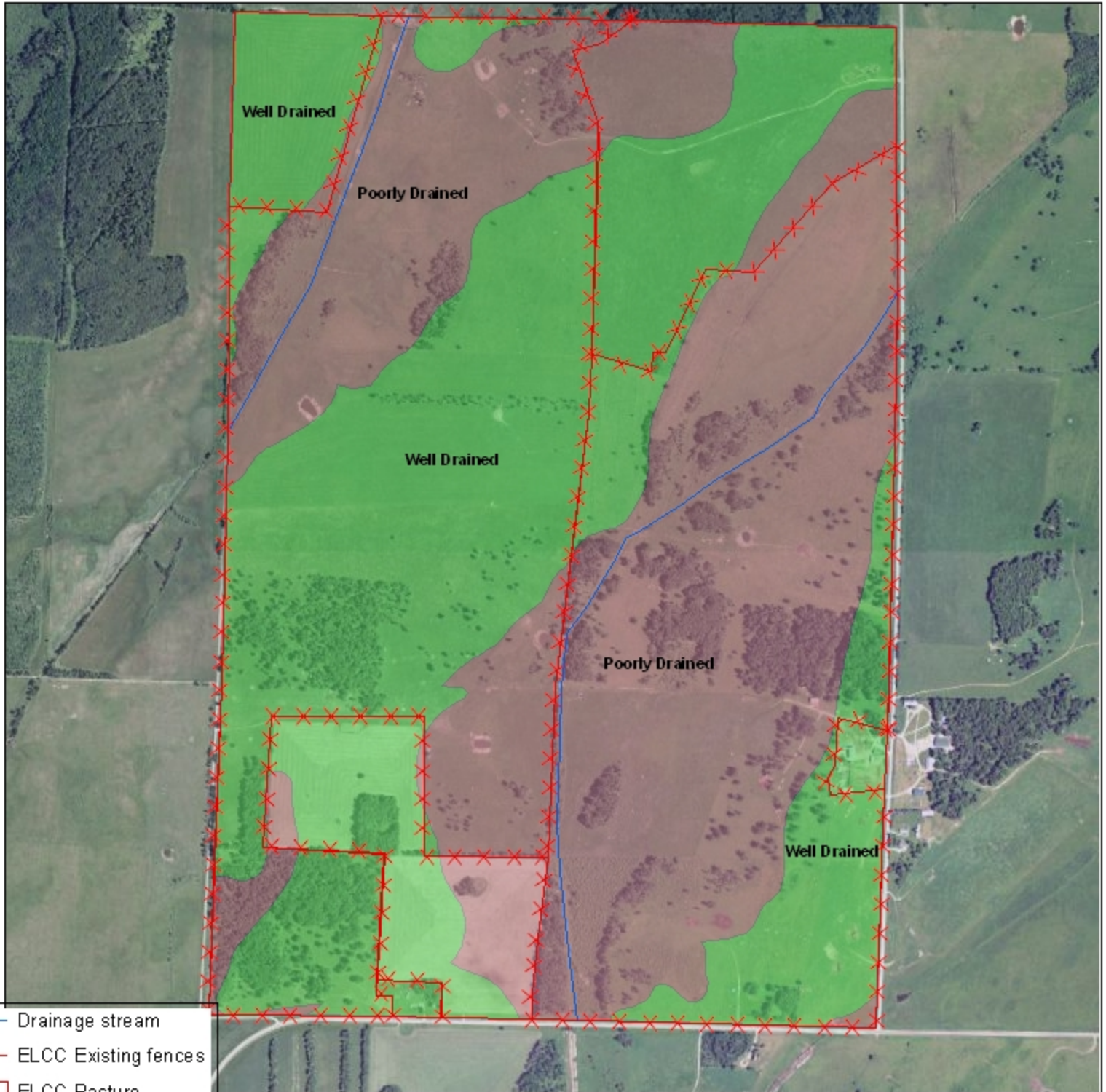


-  Drainage stream
-  ELCC Existing fences
-  ELCC Pasture

1:13,200 1 inch equals 1,100 feet



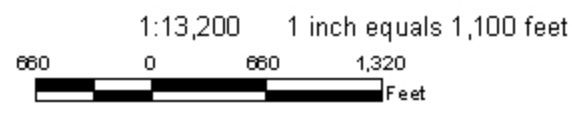
# Envirothon Land and Cattle Company: Soil Conditions



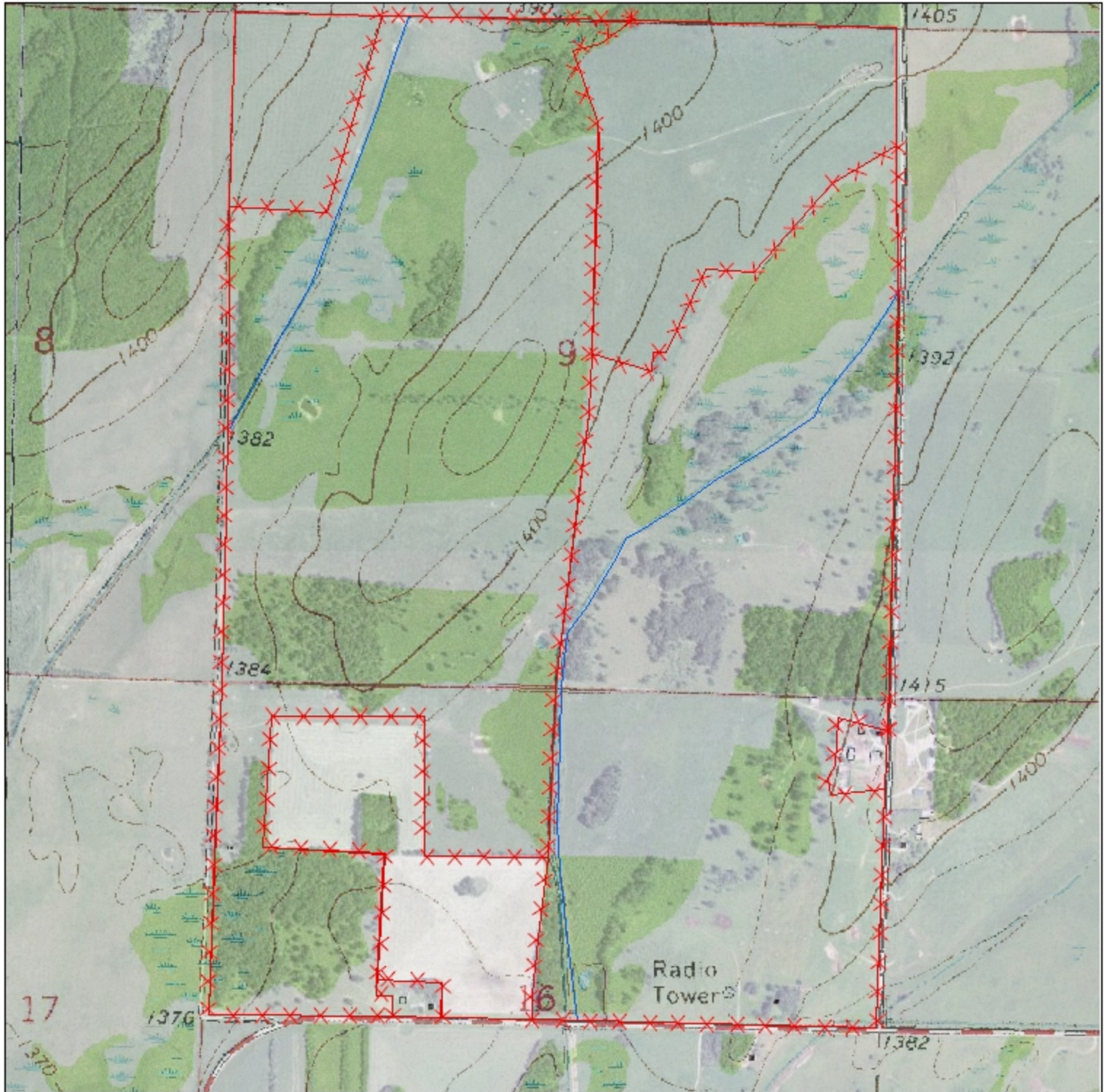
— Drainage stream  
✕ ELCC Existing fences  
□ ELCC Pasture

**hydric\_rating**  
**HydrcRatng**

■ Poorly Drained  
■ Well Drained



# Envirothon Land and Cattle Company: Topography

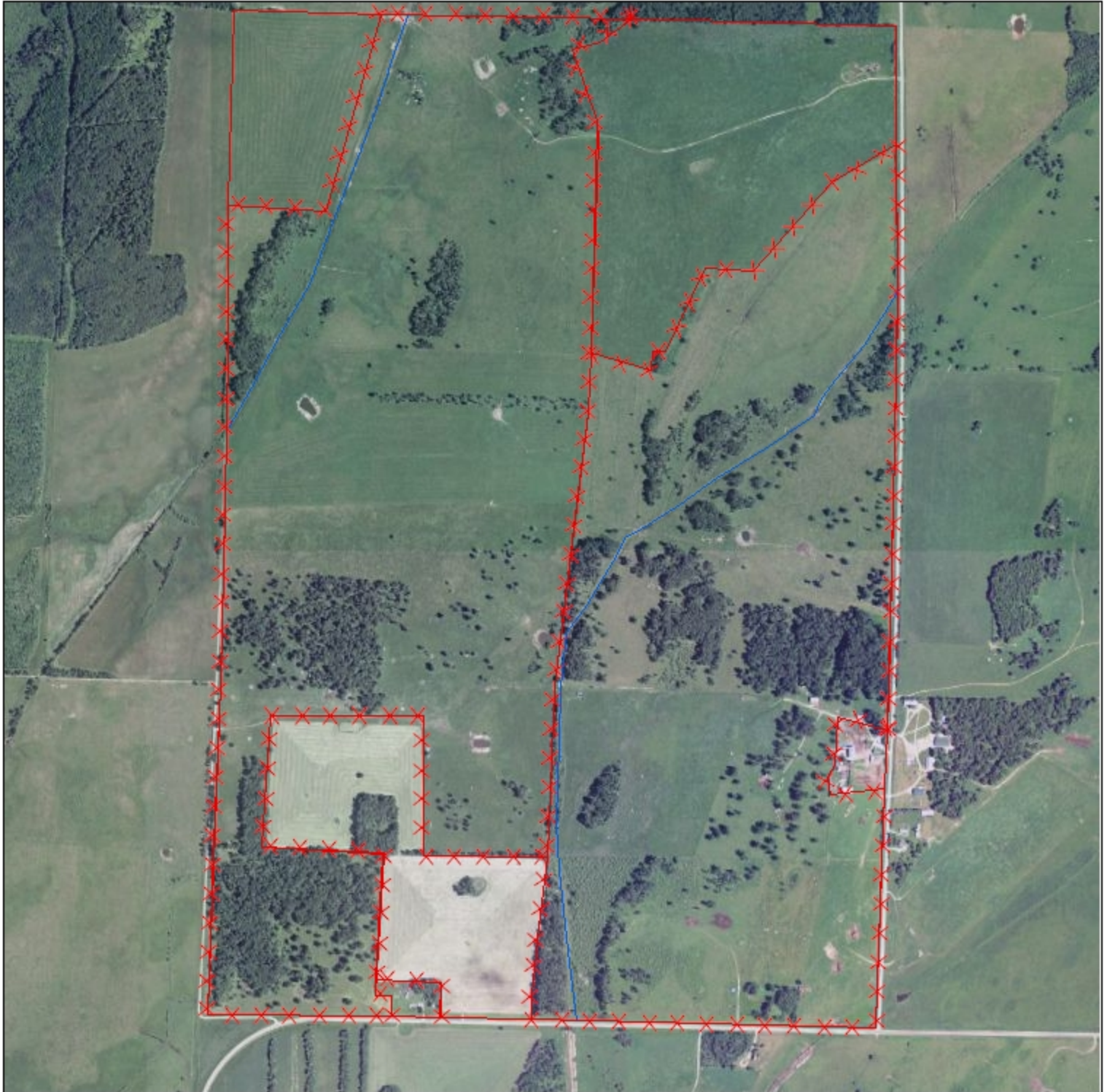


- Drainage stream
- ✕ ELCC Existing fences
- ▭ ELCC Pasture

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# Envirothon Land and Cattle Company:



- Drainage stream
- ✕ ELCC Existing fences
- ▭ ELCC Pasture

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