Sign Up Criteria

Protecting Minnesota's Lakes of Outstanding Biological Significance, Phase 5

Northern Waters Land Trust and Minnesota Land Trust utilize a multi-criteria scoring system to prioritize land protection opportunities in the watersheds of Lakes of Outstanding Biological Significance (LOBS). Each parcel is scored based on two main factors and nine priority factors, as described in Table 1.

In conjunction with this scoring system, we have developed a user-friendly interactive map. This resource identifies properties within LOBS watersheds and utilizes a GIS analysis to score their priority for conservation. The higher the score, the greater the priority for conservation action. Users can click on an individual parcel to see the scoring breakdown (Figure A) The images below show how each parcel is scored for both conservation easements (Figure b) and fee title acquisitions (Figure C). This allows our conservation professionals to quickly assess and prioritize properties as they become available.

<u>Figure A:</u> Scored Parcel Example

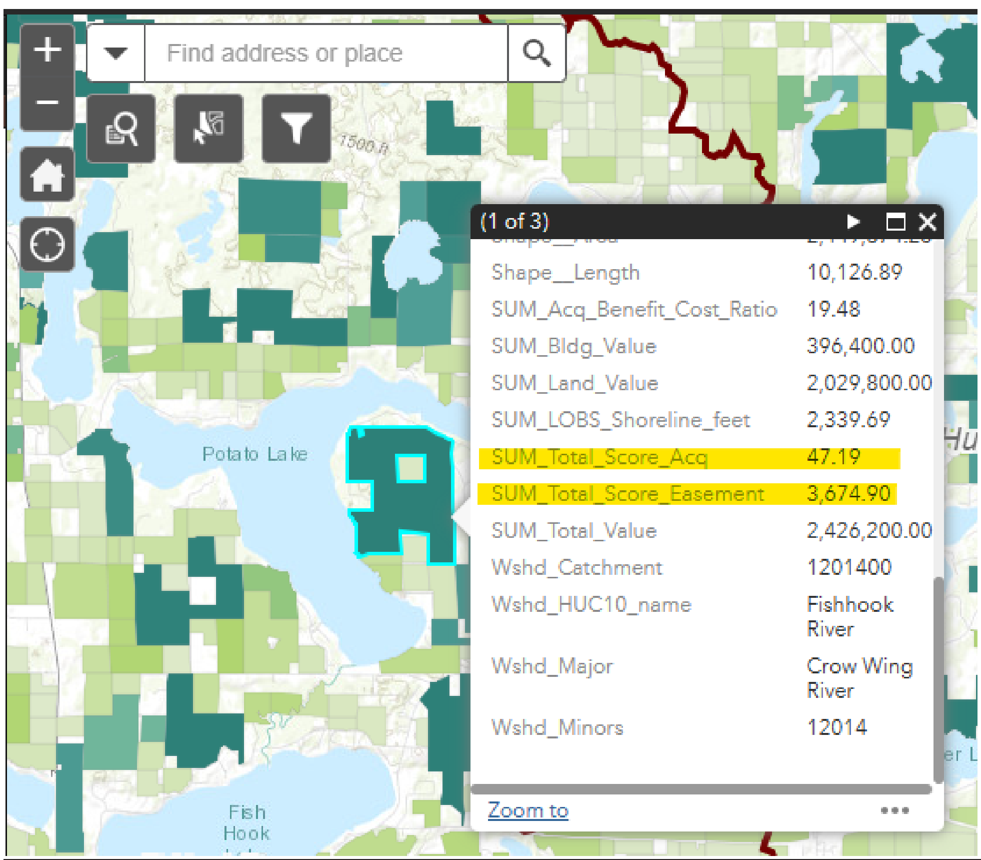

Figure B: Conservation Easement Scoring

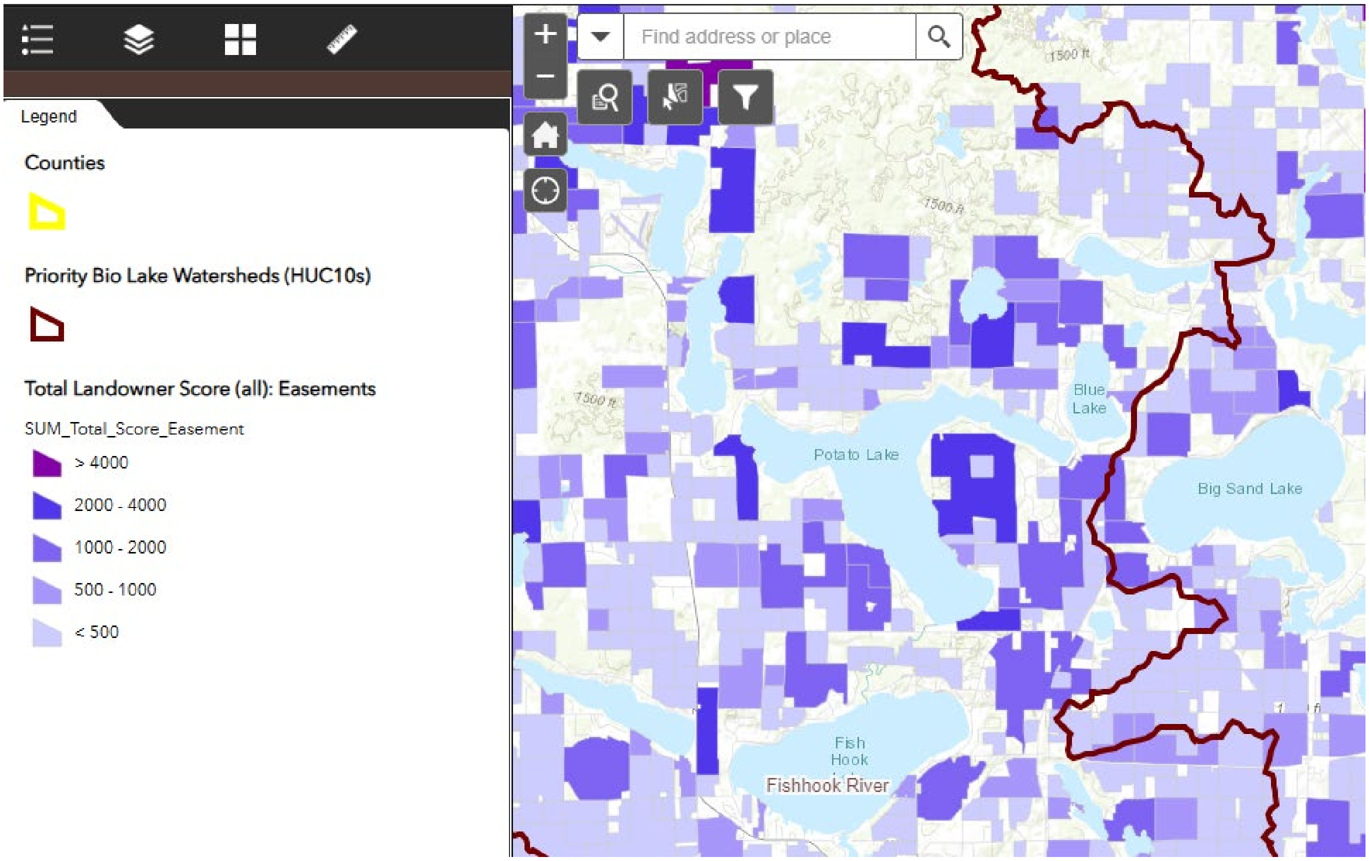

Figure C: Fee Title Acquisition Scoring

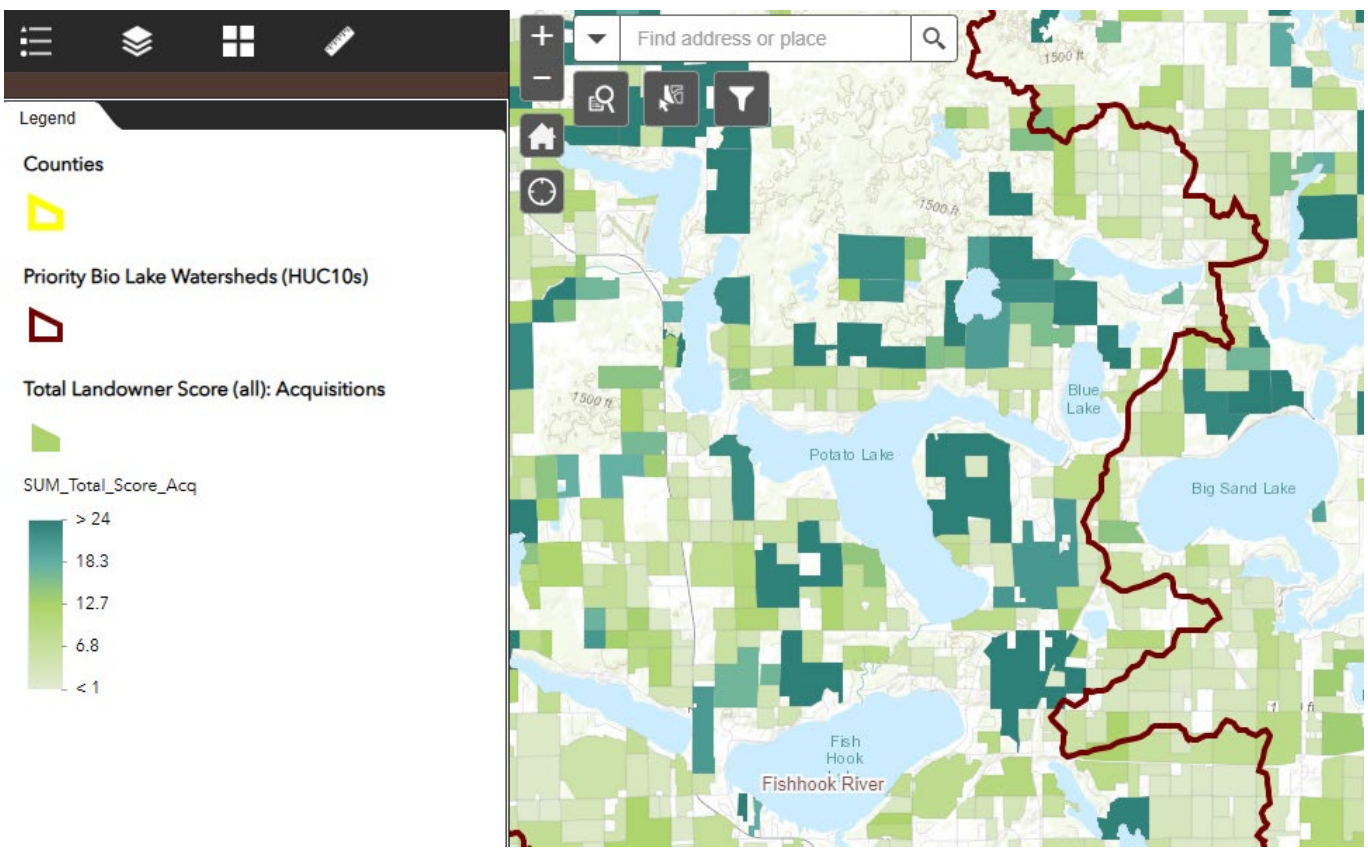

Table 1. Content considerations when prioritizing parcels for protection within watersheds of Lakes of Biological Significance.

Main Factors	Description
Size of Parcel Value = acres	The larger a natural area is, the more likely it will sustain diverse populations of plants and animals. Value = acres
Adjacency to Protected Lands Values from 1 to 4 for acquisition Values from 0 to 1 for easement	Adjacent ownership determines whether the parcel of land is isolated or associated with other protected lands. 0 = not adjacent; 1 = more than 1 parcel back; 2 = 1 parcel back; 3 = 1 side or corner touching; 4 = 2+ sides touching This factor is scaled from 0 to 1 scale for Priority Factor 2 used for easements.
PRIORITY FACTORS	
LOBS Shoreline Value of 0 or 1	Shorelines are often heterogeneous with critical habitat clustered. 0 = no LOBS shoreline for parcel; 1 = abuts LOBS shoreline
Proximity to Water Value of 0, 0.5, 1	Riparian to stream and lake (non-LOBS). 0 = not riparian for parcel; 0.5 = non riparian, but within shoreland zone; 1 = abuts stream or non-LOBS lake
Sensitive Shoreland Value of 0, 0.5, or 1	Lakeshore areas that provide unique or critical ecological habitat are more valuable. 0 = not in sensitive shoreland; 0.5 = within sensitive shoreland, but not riparian; 1 = riparian sensitive lakeshore
Hydrologic connectivity Value of 0, 0.25, 0.5, 0.75, or 1	The degree to which a riparian parcel is hydrologically connected to the lake. 0 = 0-1.5% slope; 0.25 = 1.5-3%; 0.5 = 3-6% slope; 0.75 = 6-12% slope; 1 = >12% slope
Land Connectivity Value of 0, 0.25, 0.5, 0.75, or 1	Lake quality is dependent on maintaining vegetated riparian zones and shorelines and connectivity to upland vegetation. 0 = 0 or 1 land cover type; 0.25 = 2 types; 0.5 = 3 types, 0.75 = 4; 1 = 5 or more land cover types
Rare features Value of 0 or 1	Presence of Endangered, Threatened, and Special Concern plant and animal species as well as animal aggregation sites are valuable. 0 = no rare feature documented; 1 = rare feature documented
MBS Sites of Terrestrial Biodiversity Significance Value of 0, 0.33, 0.66, or 1	Protect areas with varying levels of native biodiversity that may contain high quality native plant communities, rare plants, rare animals, and/or animal aggregations. 0 = parcel not within a MBS site; 0.33 = within Moderate MBS site; MBS site; 0.66 = within High MBS site; 1 = parcel within an Outstanding MBS site
Risk of Conversion to Urban Land Use Value of 0 or 1	Land cover type predicted to convert to urban land use. 0 = low risk for conversion; 1 = high risk for conversion (>25 E911 pts per sq. mile)
Risk of Conversion to Ag Land Use Value of 0, 0.25, 0.5, 0.75, or 1	Land cover type predicted to be converted to cultivated crops (areas used to produce annual crops or actively tilled areas). Applied to private forested lands > 20 acres with soil survey land capability class of 1-4 (suitable for farming). 0 = <10%; 0.25 = 10-20%; 0.5 = 20-30%; 0.75 = 30-40%; 1 = >40% forest Conversion Risk

The equations used:

For Initial Conservation Easement Ranking (for outreach)

Weight Parcel Size by three factors

Benefit Index = Parcel Size x Priority Factor1 x Priority Factor2 x Priority Factor3

A. Parcel Size = number of acres for the parcel
B. Priority Factor1 = 1 + (LOBS shoreline[0-1] + proximate to other riparian[0-1] + sensitive lakeshore[0-1] + hydrologic connectivity[0-1]) x 3
   a. [min is 1, max is 13]
C. Priority Factor2 = 1 + ((adjacent to protected lands[0-1] + land connectivity[0-1] + rare feature[0-1] + MBS site[0-1])/4)
   a. [min is 1, max is 2]
D. Priority Factor3 = 1 + ((conversion risk to urban[0-1] + conversion risk to ag[0-1])/2)
   a. [min is 1, max is 2]
E. For multiple parcels with same ownership, the parcel indices are summed.

For Final Conservation Easement Ranking (for help in decision-making)

BCR = 1000 x Benefit Index / Cost

Cost = $ for easement

For Initial Acquisition -- 'adjacent to protected lands'

Weight Parcel Adjacency by three factors

Benefit Index = Parcel Adjacency[1-4] x Priority Factor1 x Priority Factor2 x Priority Factor3

A. Priority Factor1 = 1 + (LOBS shoreline[0-1] + proximate to other riparian[0-1] + sensitive lakeshore[0-1] + hydrologic connectivity[0-1])
   a. [min is 1, max is 5]
B. Priority Factor2 = 1 + ((land connectivity[0-1] + rare feature[0-1] + MBS site[0-1])/3)
   a. [min is 1, max is 2]
C. Priority Factor3 = 1 + ((conversion risk to urban[0-1] + conversion risk to ag[0-1])/2)
   a. [min is 1, max is 2]

For Final Acquisition Ranking (for help in decision-making)

BCR = 1000 x Benefit Index / Cost

Cost = $/acre for acquisition