

UNITED STATES DEPARTMENT OF AGRICULTURE

SOIL CONSERVATION SERVICE

Federal Building, Room 113, 515 W. First Street, Duluth, Minnesota 55802

SUBJECT: ENG - Assistance - Windemere Township Landowners  
Ass'n (Sturgeon Lake Project)

DATE: January 29, 1974

TO: Konval H. Bergum, District Conservationist  
SCS, Hinckley, Minnesota

The problem is the water level of Sturgeon Lake is high causing beach erosion and individual home drainage and foundation problems. This is caused by several things. One is the higher than normal rainfall which occurred during the last two years. Second is the higher ground water levels which occur with a higher rainfall period. Third Sturgeon Lake is a pocketed lake and has no defined outlet.

The solution to this problem can be accomplished by one of three basic alternatives:

1. Construction of an open drainage ditch to outlet into the Willow River. This would require a couple lake level control structures and necessary grade control structure for channel stability.
2. A lake level control structure using a buried pipe outlet from the lake to some stable outlet point.
3. Some combination of the previous two alternatives.

Routes of a possible installation works are shown on the attached map. The routes shown are general locations and may be varied. The estimated cost of construction would be from \$100,000 for routes no. 1 and 4 to \$500,000 for route no. 2 with route no. 3 in between. Other costs to arrive at total installation and construction are: engineering, administration, land and water rights. Note: estimated pipe <sup>size</sup> for various estimates were based upon an approximate water removal rate of  $\frac{1}{2}$ ' per day from the lake surface.

Several other items which should be considered before selection of type of outlet and route are:

1. Effects on existing land use
2. Possibilities of excess water loss if deep ditch is used (Sandy conditions in the area)
3. Properties that will be affected
4. Rate of lake level draw down
5. Establishment of all lake levels involved in an alternative



This job will require a large amount of time. Due to this it should either be an RC&D project or will require Mr. Major's approval before working on as a CO-01 project. In either case the local people should come to some decision as to which route and possible alternative they would like a preliminary plan developed on. Then a preliminary profile survey could be run and borings taken to develop a preliminary design. A study of ground water movement should also be involved in the preliminary engineering work to assist in determining hydrology of the watershed and outlet needed.

The Commissioner of Natural Resources will have to establish levels of all lakes involved to be used in a final design. It may be beneficial to Kelsh plot this area for design purposes. An impact statement will need to be developed for this project also.

The above data should shed some additional light on this project. They may wish to hire a private engineering firm to design this project. When some decisions have been made as to route and approach to take on this project the area staff will assist as needed.

*Ronald H. Hansen*  
Ronald H. Hansen  
Area Engineer

Attachment

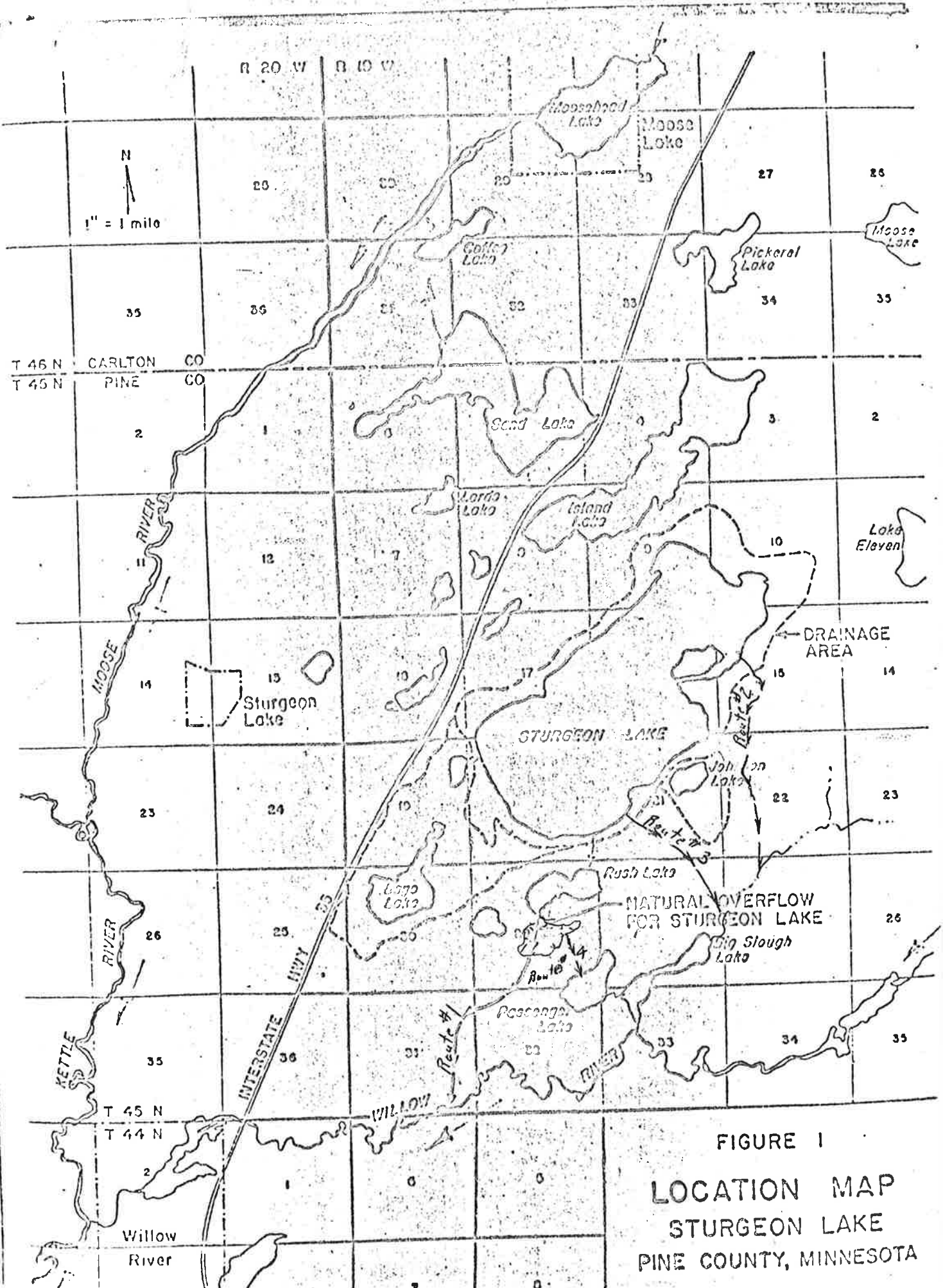


FIGURE I  
 LOCATION MAP  
 STURGEON LAKE  
 PINE COUNTY, MINNESOTA