

Goose Pond Tributary
at Arlington

Triennial Standards Review

October 1993

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Southern District

Bureau of Water Resource Management
Wisconsin Department of Natural Resources

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INTRODUCTION

After an on-site evaluation and review of information relating to stream habitat, water quality, and biology, it is recommended that the Goose Pond Tributary at Arlington remain classified Limited Aquatic Life, LAL(f). Low natural stream flow, in-place pollutants, and irretrievable cultural alterations suggest that the classification not be upgraded.

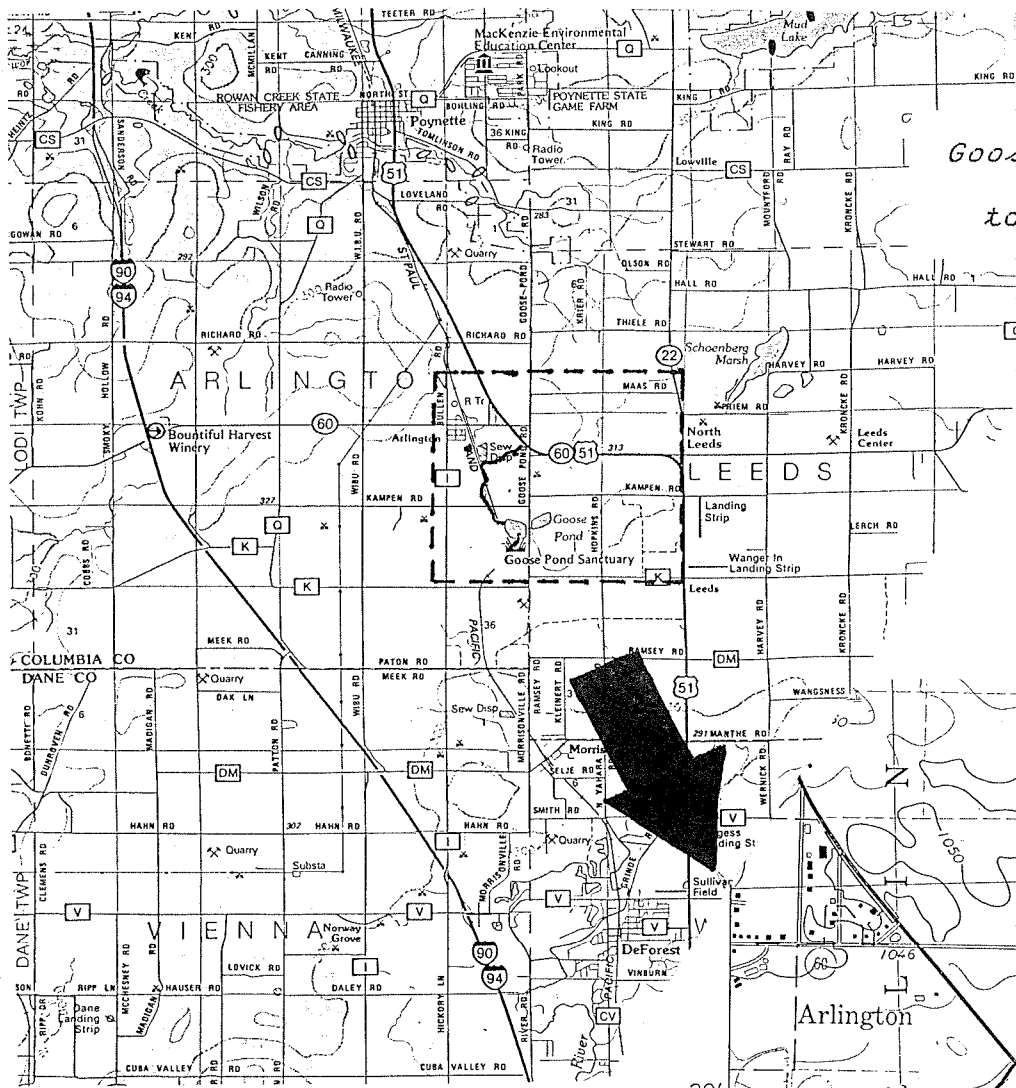
GENERAL DESCRIPTION, HABITAT, AND STREAM BIOLOGY

Goose Pond Tributary is a small warmwater stream located in southern Columbia County just south of the town of Arlington (see map). It flows for less than one mile before entering Goose Pond, a 174 acre land-locked prairie pothole. The pond is managed by the Madison Audubon Society in a manner to recreate a prairie pothole ecosystem as it once existed. The pond suffers from winterkill, fluctuating water levels, and severe agricultural runoff. Seepage and evaporation are the only means for water to escape the pond, as there is no outlet. Both the Arlington POTW and the Del Monte Cannery have a permitted discharge into the tributary.

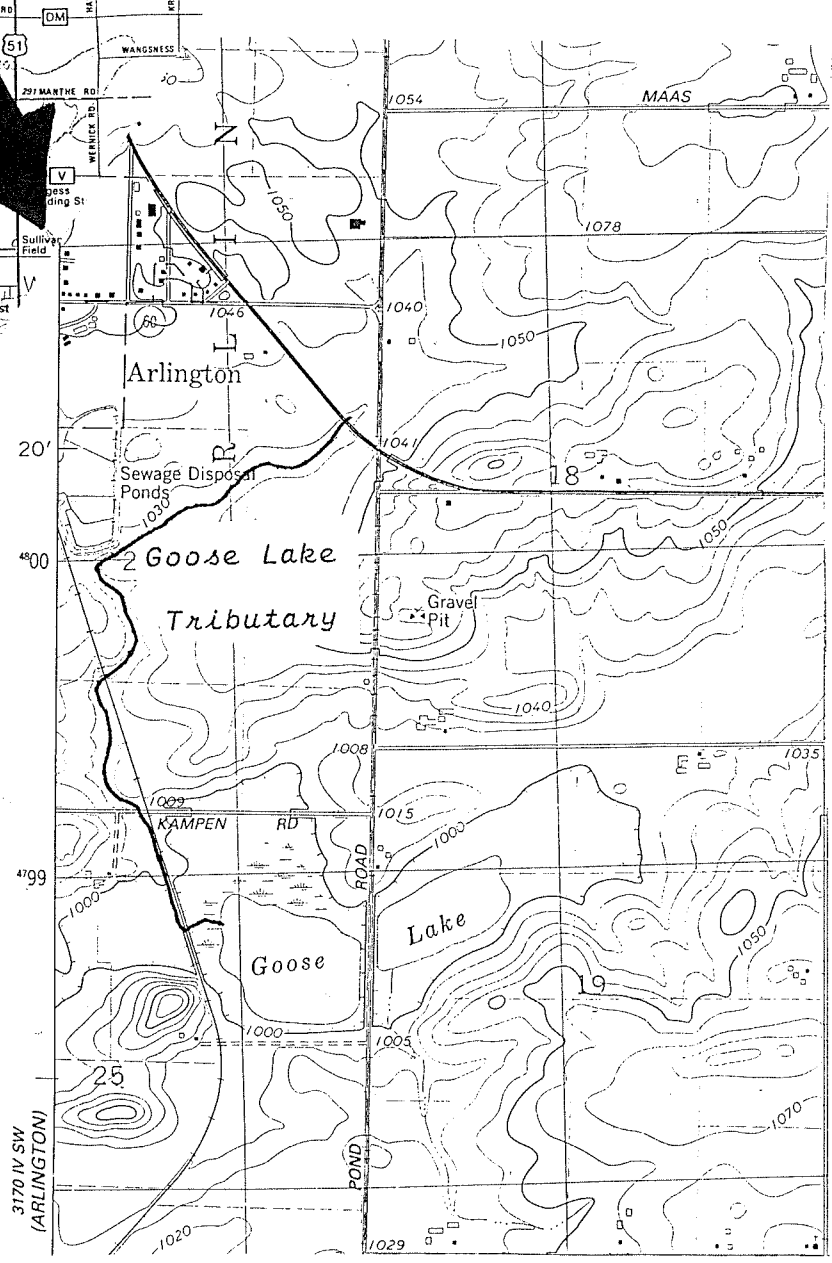
The width of the stream averages less than 2.0 m with depths typically less than 1.0 m. Channelization is obvious along most of the stream's route limiting available aquatic life habitat (photo 1).

Instream, riparian, and overhead cover is lacking. The banks are characterized by tall wetland grasses with few trees or bushy areas limiting overhead canopy. In areas where the stream has been ditched, plants such as burdocks and smartweed dominate the disturbed banks. Instream vegetation, along with instream cover such as boulders and logs, is also sparse providing little suitable aquatic habitat (photo 2).

Erosion problems are significant within the Goose Pond area mainly due to it's agricultural setting. Extensive row cropping surrounds the tributary, and this coupled with other erosion problems associated with agricultural practices generate a large degree of siltation along with nutrient influxes. Bank stability is also low causing siltation to be a problem throughout the stream's course with embeddedness high. The substrate is mainly clay along with some silt and sand. There are no gravel or rocky sections with no riffled areas.



*Goose Lake Tributary
to Goose Lake*



Low flows also decrease the tributary's chances of reaching it's full biological potential. The stream's low flow limits the depth of the tributary creating only very shallow pools (less than 1.0 m) and causing an increased potential for elevated water temperatures during summer months.

Backpack electroshocking was conducted on October 20, 1993, and in a 50 meter section north of Kampen Rd. no fish were found. This was not surprising since infrequent droughts and shallow water in the pond that often freezes solid in the winter provides poor habitat for fish. In the past, bullheads and fathead minnows have been stocked and these populations persist in both the pond and the tributary when there is high water.

Both the tributary and the pond do provide good habitat for waterfowl, amphibians, and reptiles. The abundance of these different species is monitored around the Goose Pond area along with vegetation surveys. Eastern tiger salamanders are abundant, along with over six different species of frogs including chorus, spring peepers, leopard, eastern and Cope's green tree, and green frogs. Snapping, painted, and Blanding's turtles (which is now on the state's threatened list) are also found in the area. Most of these species have been found in the area surrounding the pond and not in the small tributary.

Although the Goose Pond Sanctuary is a refuge for an abundance of waterfowl and animals, it is recommended that there be no classification upgrade for the stream. The tributary is severely degraded by agricultural runoff and erosion problems. Lack of cover and low flows also limit habitat. Based on these obvious conditions along with irretrievable cultural changes, it is recommended that the Goose Pond Tributary remain classified Limited Aquatic Life, LAL(f).



Photo 1 - Channelization downstream from Kampen Road limits habitat. The banks are dominated by wetland grasses. The boulders in the picture are not typical of the entire tributary.



Photo 2 - Upstream from Kampen Road, habitat is also limited. The only instream cover came from filamentous algae shown here.

Stream GOOSE LAKE TRIBE Reach Location UPSTREAM AT Kampen Rd. Reach Score/Rating 226
 City Columbia Date 10/20/93 Evaluator DREHER Classification LAL

Rating Item	Category			
	Excellent	Good	Fair	Poor
Watershed Erosion	No evidence of significant erosion. Stable forest or grass land. Little potential for future erosion. 8	Some erosion evident. No significant "raw" areas. Good land mgmt. practices in area. Low potential for significant erosion. 10	Moderate erosion evident. Erosion from heavy storm events obvious. Some "raw" areas. Potential for significant erosion. 14	Heavy erosion evident. Probable erosion from any run off. 16
Watershed Nonpoint Source	No evidence of significant source. Little potential for future problem. 8	Some potential sources (roads, urban area, farm fields). 10	Moderate sources (small wetlands, tile fields, urban area, intense agriculture). 14	Obvious sources (major wetland drainage, high use urban or industrial area, feed lots, impoundment). 16
Bank Erosion, Failure	No evidence of significant erosion or bank failure. Little potential for future problem. 4	Infrequent, small areas, mostly healed over. Some potential in extreme floods. 8	Moderate frequency and size. Some "raw" spots. Erosion potential during high flow. 16	Many eroded areas. "Raw" areas frequent along straight sections and bends. 20
Bank Vegetative Protection	90% plant density. Diverse trees, shrubs, grass. Plants healthy with apparently good root system. 6	70-90% density. Fewer plant species. A few barren or thin areas. Vegetation appears generally healthy. 9	50-70% density. Dominated by grass, sparse trees and shrubs. Plant types and conditions suggest poorer soil binding. 15	<50% density. Many raw areas. Thin grass, few if any trees and shrubs. 18
Lower Bank Channel Capacity	Ample for present peak flow plus some increase. Peak flow contained. W/D ratio <7. 8	Adequate. Overbank flows rare. W/D ratio 8-15. 10	Barely contains present peaks. Occasional overbank flow. W/D ratio 15-25. 14	Inadequate, overbank flow common. W/D ratio >25. 16
Lower Bank Deposition	Little or no enlargement of channel or point bars. 6	Some new increase in bar formation, mostly from coarse gravel. 9	Moderate deposition of new gravel and coarse sand on old and some new bars. 15	Heavy deposits of fine material, increased bar development. 16
Bottom Scouring and Deposition	Less than 5% of the bottom affected by scouring and deposition. 4	5-30% affected. Scour at constrictions and where grades steepen. Some deposition in pools. 8	30-50% affected. Deposits and scour at obstructions, constrictions and bends. Some filling of pools. 16	More than 50% of the bottom changing nearly year long. Pools almost absent due to deposition. 20
Bottom Substrate/Available Cover	Greater than 50% rubble, gravel or other stable habitat. 2	30-50% rubble, gravel or other stable habitat. Adequate habitat. 7	10-30% rubble, gravel or other stable habitat. Habitat availability less than desirable. 17	Less than 10% rubble gravel or other stable habitat. Lack of habitat is obvious. 22
Avg. Depth Riffles and Runs	Cold >1' 0 Warm >1.5' 0	6" to 1' 6 10" to 1.5' 6	3" to 6" 18 6" to 10" 18	<3" 24 <6" 24
Avg. Depth of Pools	Cold >4' 0 Warm >5' 0	3' to 4' 6 4' to 5' 6	2' to 3' 18 3' to 4' 18	<2' 24 <3' 24
Flow, at Rep. Low Flow	Cold >2 cfs 0 Warm >5 cfs 0	1-2 cfs 6 2-5 cfs 6	.5-1 cfs 18 1-2 cfs 18	<.5 cfs 24 <1 cfs 24
Pool/Riffle, Run/Bend Ratio (distance between riffles ÷ stream width)	5-7. Variety of habitat. Deep riffles and pools. 4	7-15. Adequate depth in pools and riffles. Bends provide habitat. 8	15-25. Occasional riffle or bend. Bottom contours provide some habitat. 16	>25. Essentially a straight stream. Generally all flat water or shallow riffle. Poor habitat. 20
Aesthetics	Wilderness characteristics, outstanding natural beauty. Usually wooded or un-pastured corridor. 8	High natural beauty. Trees, historic site. Some development may be visible. 10	Common setting, not offensive. Developed but uncluttered area. 14	Stream does not enhance aesthetics. Condition of stream is offensive. 16

Column Totals:

Column Scores E _____ +G _____ +F _____ +P _____ = 226 = Score

<70 = Excellent, 71-129 = Good, 130-200 = Fair, >200 = Poor

Stream Reach Type		Run
Stream Reach Length		100'
Stream Reach Depth (ft.)		1'
$\bar{z}$ present		
$\bar{z}$ max. present		2'
low flow		46"
Stream Reach Width (ft.)		
$\bar{x}$ present		1.5'
$\bar{x}$ high flow		6'
$\bar{x}$ low flow		0
Substrate Size (Min. 10%)		
Detritus (P/Present)		
Clay		50
Silt		40
Sand		10
Gravel .25"-3.0"		
Rubble 3.01"-12.0"		
Boulder >12.01"		
Bedrock		
Velocity $\bar{x}$ present (m e)		41 fms
Vel. max. present		41 fms
gradient		low
Bottom Deposition (Min. 10%)		
% area bottom covered		90%
$\bar{x}$ depth sediment		1"
max. depth sediment		6"
deposition type		
Material Comp. (Min. 10%)		
detritus		30%
silt		70%
sand		
gravel		
Overhead Bank Cover		
$\bar{x}$ bank width *0! <.25! <.5' etc.		15'
% of reach (10% Min.)		
$\bar{x}$ depth below bank *		
$\bar{x}$ bank + veg. width *		
% of reach (10% Min.)		
$\bar{x}$ depth below bank+veg.*		
Instream Cover Rating		ff
↑ Cover Material (Min. 10%)		
=np	rock/bould. (P/Present)	30
=ff	log/tree/roots	10
=gf	debris (other)	10
=fg	instream veg. film, algae	40
=gg	bank+veg. (terrestrial)	10
depth/channel morph.		
Shading (0,25,50,75,100)		25
Aquatic Veg. (Min.10%) macro		
% coverage meso		
Floodplain Vegetation Type		Ag
Purple Loosestrife		-
Lower Bank Height		
Bank Stability % >90 >70 >50 <50		<50
Bank Deposition		yes
Channelization		yes
Comments		
Section appears like may have been ditched within the last couple years		

Region SCR County Columbia Report Date 10/1993 Classification LAL
 Water Body: Goose Lake, Trib to
 Discharger: Arlington WWTP / Del Monte Corp

If stream is classified as Limited Forage Fish (LFF) or Limited Aquatic Life (LAL), check any of the following Use Attainability Analysis factors that are identified in the classification report:

- ☐ Naturally occurring pollutant concentrations prevent the attainment of use
- ☒ Natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use, unless these conditions may be compensated for by the discharge of sufficient volume of effluent discharges without violating State water conservation requirements to enable uses to be met
- ☐ Human caused conditions or sources of pollution prevent the attainment of the use and cannot be remedied or would cause more environmental damage to correct than to leave in place
- ☐ Dams, diversions or other types of hydrologic modifications preclude the attainment of the use, and it is not feasible to restore the water body to its original condition or operate such modification in a way that would result in the attainment of the use
- ☒ Physical conditions related to the natural features of the water body, such as the lack of a proper substrate, cover, flow, depth, pools, riffles, and the like, unrelated to water quality, preclude attainment of aquatic life protection uses
- ☐ Controls more stringent than those required by sections 301(b) and 306 of the Act would result in substantial and widespread economic and social impact

Supporting Evidence in the report (include comments on how complete/thorough data is)

- ☐ Biological Data (fish/invert) limited discussion
- ☐ Chemical Data (temp, D.O., etc.)
- ☐ Physical Data (flow, depth, etc.) limited discussion
- ☒ Habitat Description
- ☒ Site Description/Map
- ☒ Other: photos

Historical Reports in file:

10/1993 - Richard Dreher / Mark Sesing
12/15/77 - Tom Bainbridge
8/28/75 - Tom Bainbridge

Additional Comments/How to improve report:

- lack of flow & habitat cover are id'd as factors limiting PAC attainment of stream. How do tree rooted runoff erosion problems come into play?
- need to check in w/ biologists

Arlington STP
Columbia County
December 15, 1977

Goose Lake Tributary

The Arlington STP discharges to the Goose Lake Tributary which flows for less than one mile before entering Goose Lake, a small land locked lake in a marshy basin in the ground moraine. The water in the lake is generally turbid and hard with a high conductance. The lake suffers from winter kill, fluctuating water levels, and agricultural runoff. Bullheads provide the main fishery in Goose Lake. Goose Lake is a land locked lake with seepage and evaporation the only means of water reduction.

Recommendations

The Goose Lake tributary should be classified as noncontinuous marginal.

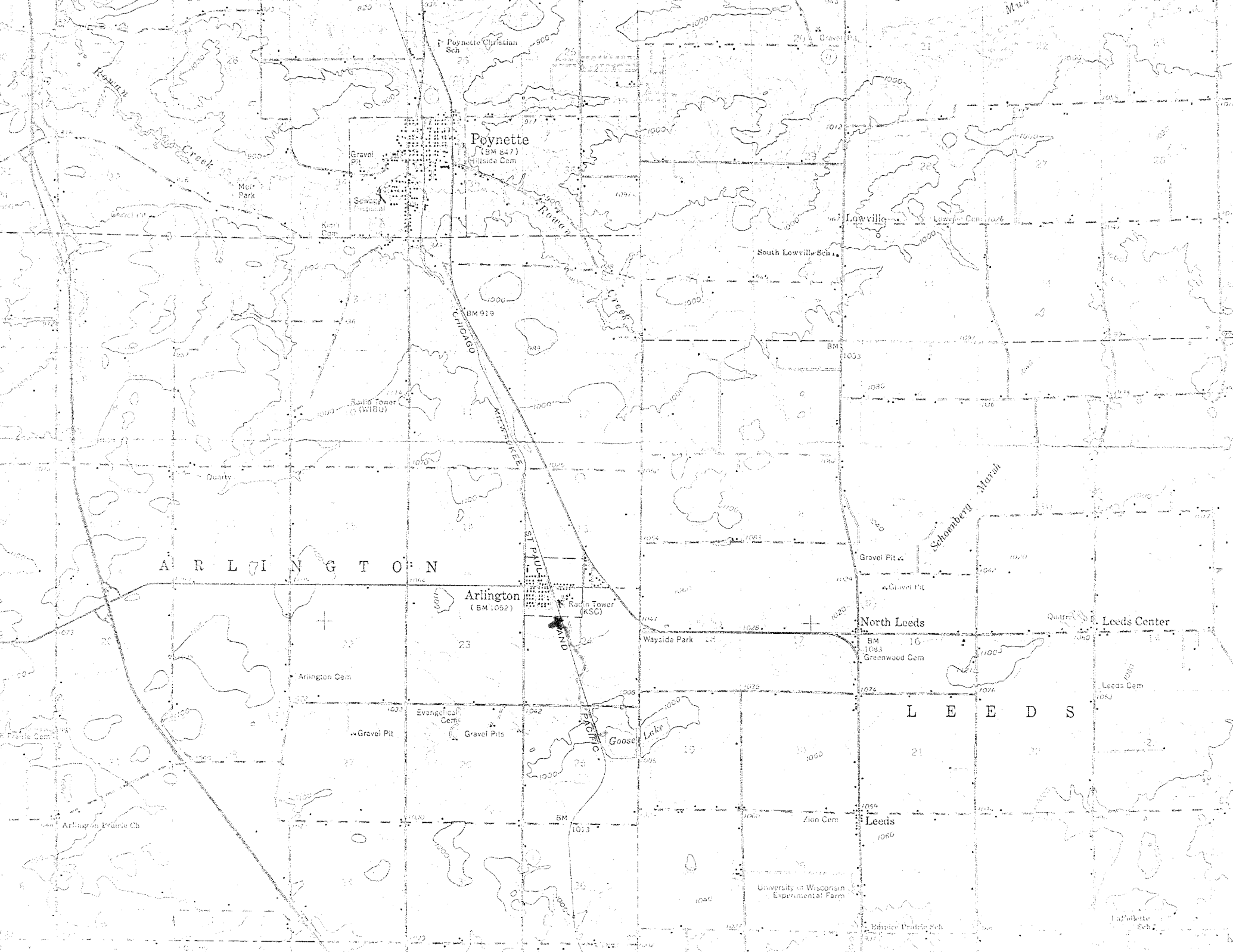
The above recommendation represents a concurrence of opinion of the stream classification team who are as follows:

Robert Weber, District Engineer
Jim Congdon, Area Fish Manager
Tom Bainbridge, District Biologist
Roger Schlessner, Natural Resources Specialist

Respectfully submitted,


Thomas Bainbridge
District Biologist

RS:mlu



DEL MONTE CORPORATION, ARLINGTON
COLUMBIA COUNTY

August 28, 1975

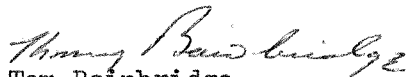
The Del Monte Cannery discharges to the Goose Lake tributary which flows for less than one mile before entering Goose Lake, a small land-locked lake in a marshy basin in the ground moraine. The water in the Lake is generally turbid and hard with an exceptionally high conductance. The high specific conductance is due, undoubtedly, to the cannery waste drainage. In mid-summer during cannery operations, the chloride content of these waters becomes excessively high. The Lake suffers from winter kill, fluctuating water levels and agricultural runoff. Bullheads provide the main fishery in Goose Lake. There are large numbers of swans and geese in the spring on the Lake. There is no outlet from Goose Lake. Seepage and evaporation is the only means for water to escape.

RECOMMENDATIONS

The Goose Lake tributary should be classified as noncontinuous agricultural.

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Bob Weber, District Engineer; Jim Congdon, Area Fish Manager; Tom Bainbridge, Stream Classification Coordinator.


Tom Bainbridge

Stream Classification Coordinator

TB:cb

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