CORRESPONDENCE/MEMORANDUM

* NOTE *
1981 Koshere report was based on a potential discharge site — Not the site that is used and appropriately proposed to be LAL.

DATE: November 19, 2002

TO: Laura Bub, WT/2

FROM: Pamela Stubbe, Superior

SUBJECT: Clover S. D. – Surface Water Classification & Designated Use

The Clover S. D. wastewater treatment facility includes a two-cell stabilization pond system to treat waste generated from the homes and businesses within the unincorporated village of Herbster, Bayfield County (Figures 1 and 2). The Department has authorized annual effluent discharge during March, April, May, September, October, or November, with it occurring most often for a one-month period in fall.

The effluent is discharged from an underground pipe (Figure 3) to a high-gradient ravine network (Figures 4-6), which appears to usually be dry except during periodic rain or discharge events, that continues northward approximately 500 m to Lake Superior. During its course, the ravine descends approximately 15m. The discharged effluent enters a small ravine that connects approximately 100 m downstream to the main ravine.

On 29 October 2002, Water Resources Management Specialist Bill Jaeger, Wastewater Engineer Chuck Olson, and I evaluated the site. The Clover S. D. facility was discharging effluent, and therefore, flow was evident from the pipe and in the ravine. The water depth was less than 0.1 m. We found no aquatic macroinvertebrates in the smaller upstream ravine. We found a few sparse macroinvertebrates, including physid snails and two caddisfly casings, in the main ravine downstream of the discharge area. The lack of suitable fish habitat and the small amount of flow/water negated fish sampling.

RECOMMENDATION

The natural drainage ravine, which receives wastewater from the Clover S. D. facility, shall be classified as a "diffused surface water" (NR 104.02(1)(b) and shall be placed in the "marginal surface water/limited aquatic life/very tolerant aquatic life" category (NR 104.02(3)(b). The reasons for this recommendation are as follows:

1. *Physical conditions related to the natural features of the water body, such as the lack of proper substrate, cover, flow, depth, pools, riffles, and the like, unrelated to water quality, preclude attainment of a Diverse Fish and Aquatic Life community.*

2. *Natural, ephemeral, intermittent, or low flow conditions or water levels prevent the attainment of a Diverse Fish and Aquatic Life community.*

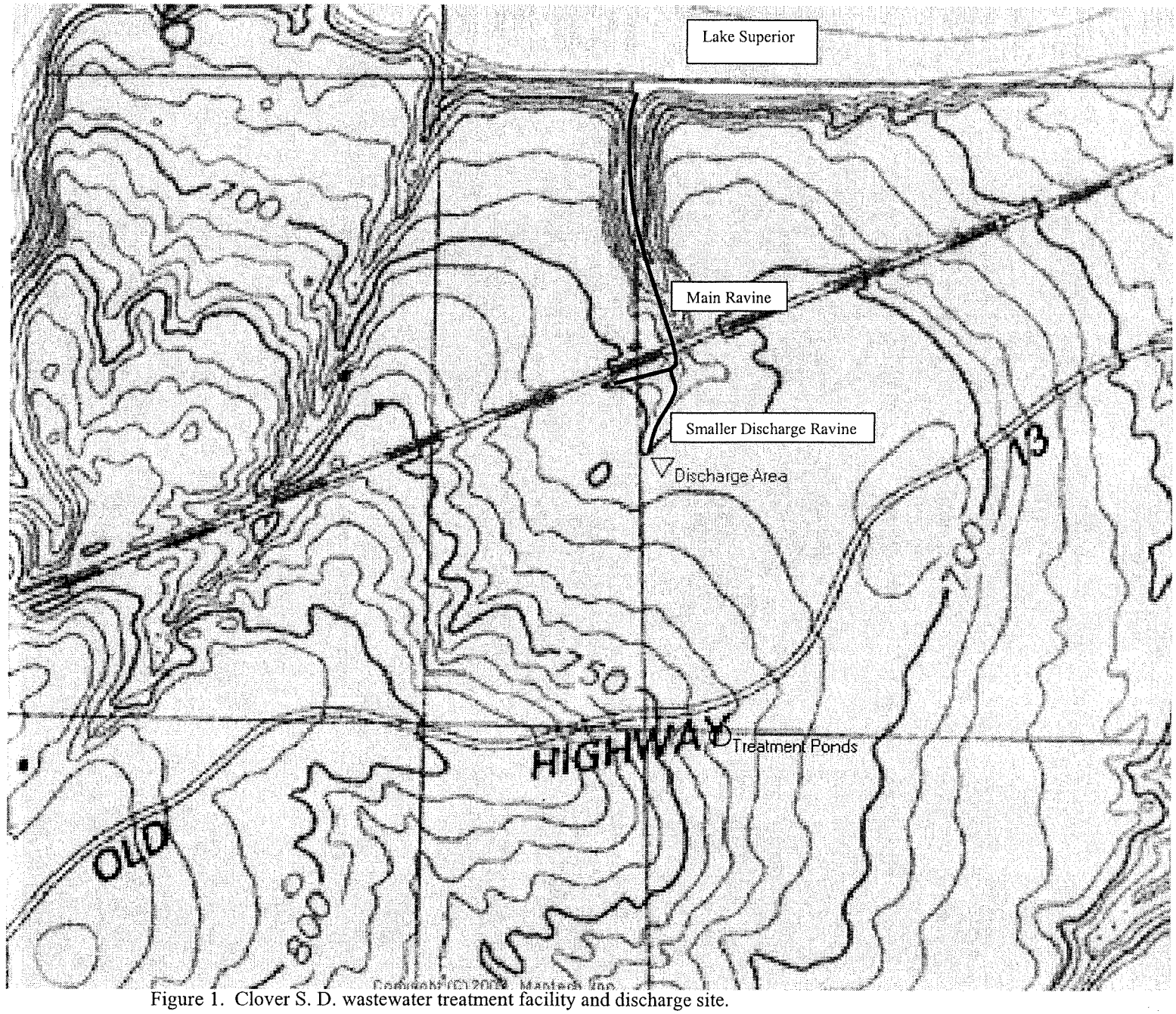
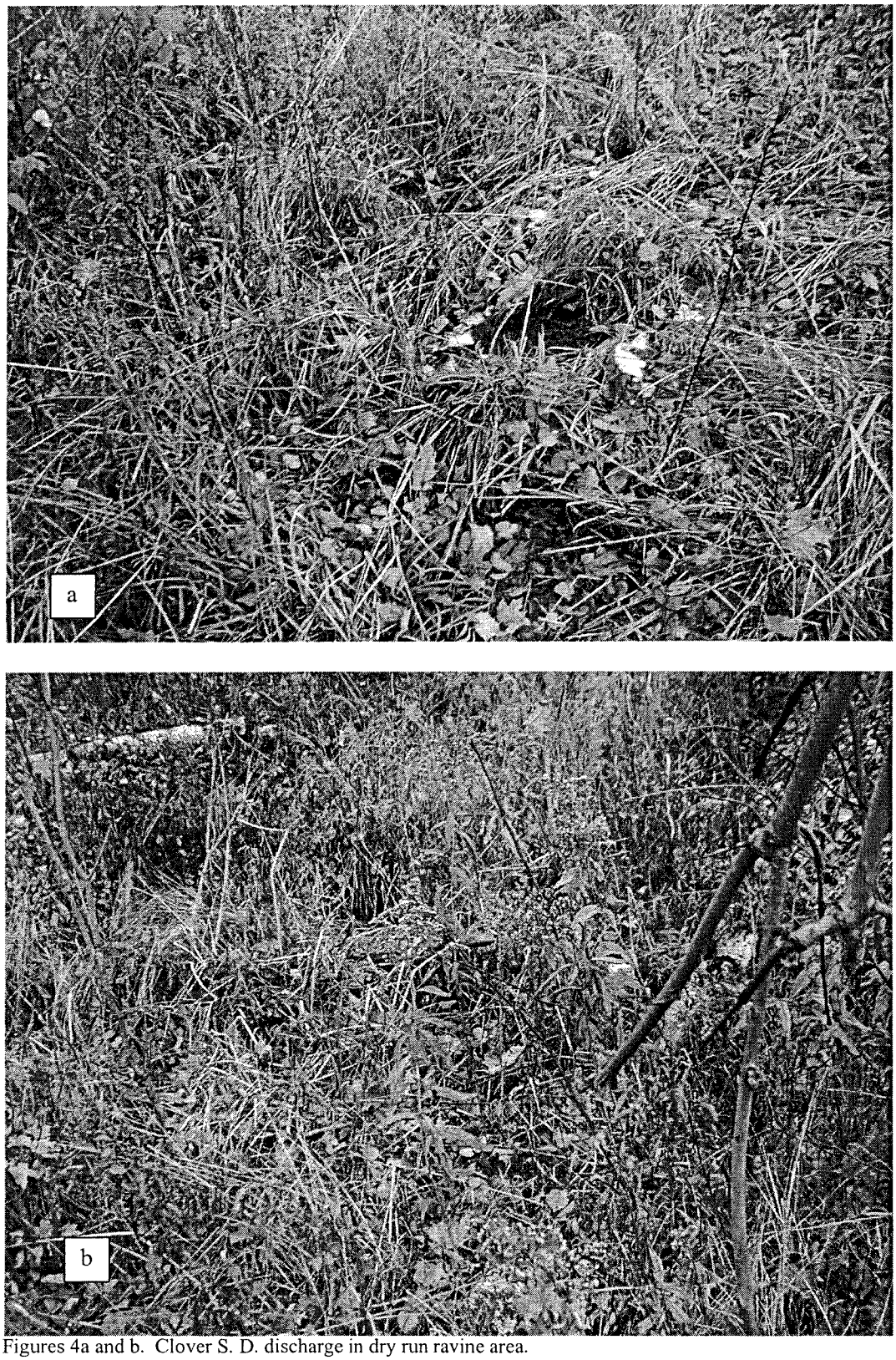


Figure 1. Clover S. D. wastewater treatment facility and discharge site.

Figure 2. Clover S. D. wastewater treatment ponds, facing southeast.

Figure 3. Clover S. D. outlet pipe discharging effluent to dry run ravine.



Figures 4a and b. Clover S. D. discharge in dry run ravine area.

Figure 5. Smaller ravine that receives Clover S. D. effluent discharge, upstream of main ravine channel.

Figure 5. View of main ravine downstream, facing north of CTH 13.

Herbster - 2/18/85

Looked @ proposed discharge site to dry run to L. Superior off STH 13. Approx. 1/4 mile to Lake through very steep sided ravine. Some evidence of periodic high flow, but looks to be very temporary. Numerous criss-crossed fallen trees near mouth.

Ravine crosses STH 13 through an old concrete culvert ≈ 3' in diameter. At mouth, drift wood is washed ≈ 20' back into the stream. Ice piled up on shore prevented view of any possible beach and mouth of stream. It appears there would be little or no beach. Adjacent slopes of eroded red clay suggest an eroding beachline. Chances of recreational or aesthetic interference look minimal. An open channel discharge to the ravine should improve W.Q. by the time it reaches the lake. Little chance of ponding, stagnation.

CORRESPONDENCE/MEMORANDUM

STATE OF WISCONSIN

Date: December 28, 1981

File Ref: 3200
(T. Bennwitz - WQM/2)

To: Central Office - Madison

From: Frank J. Koshere FJK

Subject: Surface Water Classification of an Unnamed Tributary to Lake Superior at Herbster, Bayfield County

An evaluation of the receiving water for a proposed wastewater discharge at Herbster was conducted by the NWD. The site was inspected on October 8, 1981.

Description

The proposed discharge location is at the upstream end of a 3.0 acre pond located between State Highway 13 and Bark Point Road on the shore of Lake Superior. The pond lies just east of the center of the Village of Herbster and is surrounded by public roadways.

Flow into the pond is from an unnamed tributary which originates from two feeders beginning approximately two miles upstream. The east fork is a perennial stream near its origin and macroinvertebrate samples indicate continuous stream flow at a point just above Highway 13. Estimated flow at the time of observation was approximately 0.2 cfs. Evidence of periodically much higher flows exists throughout the watershed.

At Highway 13 the stream looses stream characteristics and widens into a shallow pond fringed by willows, cinquefoil, some cattail and tag alder. The west shore of the pond is readily accesible by foot from Lake Avenue (see map). A depth of two meters was measured in the pond and a variety of aquatic plants (Potamogeton and Nuphar common) were observed. One boat containing minnow trapping equipment was docked near the residence on the southwest corner of the pond.

The pond outlet to Lake Superior is a concrete rectangular culvert under Bark Point Road. The culvert is periodically blocked on the Lake Superior side by shifting beach sand. On the day of observation, sand nearly filled the culvert to a height approximately 2 feet above the culvert bottom. The pond water level was just above the bottom of the culvert on the upstream side. Thus, lower water levels, if they occur would be due to seepage rather than surface flow. When flowing, the outlet stream crosses a narrow strip of beach to the lake.

Discussion

The pond is identified as an unnamed lake in "Surface Water Resources of Bayfield County" publication and most closely fits the lake hydrologic

classification of NR104. Combined with periodic blocking of the outlet, hydraulic detention time in the pond could be extensive. The waste assimilative capacity of the pond is small.

The pond outlet is located in a high use area of the Lake Superior beach. The beach area supports extensive recreational use, including contact recreation. A public boat landing is located a short distance east, as is a recreational campground. The outlet stream attracts a smelt run in the spring and offers a unique play area for beach goers at other times. The mouth of the Cranberry River is several hundred yards to the west and is noted for its anadromous fish runs. Any degradation of water quality resulting from the proposed discharge would seriously detract from the aesthetics of the pond and beach area and could also pose a public health problem.

The pond appears to be capable of serving as a spawning and nursery area for fish such as northern pike. Over winter survival of fish in the pond is questionable due to low water volume.

The proximity of the pond to existing residential development and the potential for recreational development of the pond area (e.g., picnic area) should be considered in locating the discharge. Any degradation of existing water quality could easily result in nuisance conditions in the residential and primary recreational area.

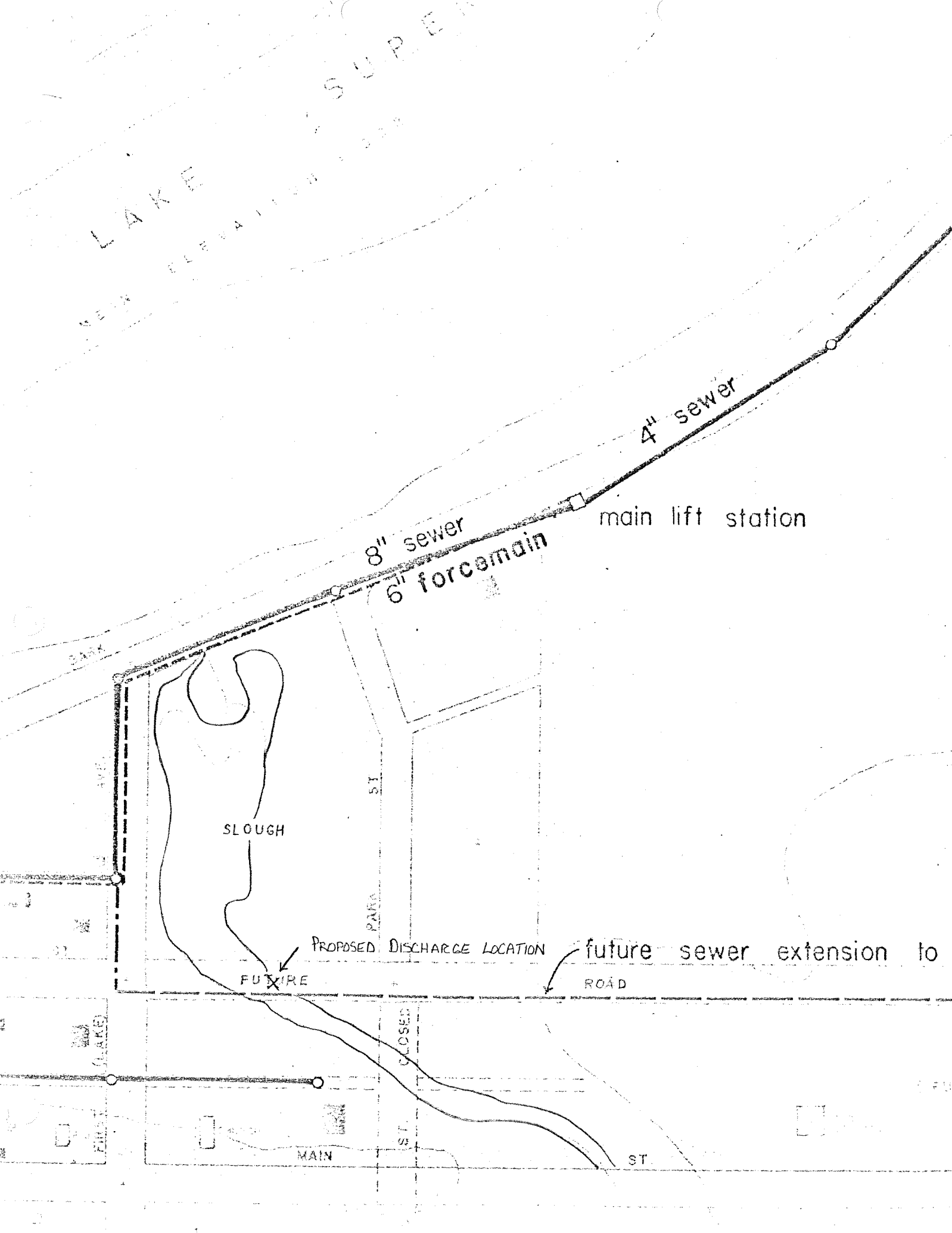
Although natural conditions in the pond may not continuously meet the 5.0 mg/l dissolved oxygen standard for fish and aquatic life, the potential for fish life combined with the unique location and character of the pond warrant the full protection of the fish and aquatic life and recreational use standards.

Personnel involved in establishing the recommendation include the district water quality biologist, water quality specialist, water quality management unit leader, and the Brule Area engineer and fish manager.

Recommendation

The pond located on an unnamed tributary to Lake Superior at T50N, R7W, SE¼ Section 5 in the Village of Herbster shall be placed in the hydrologic classification of a lake (NR104.02(1)(a)) and shall meet standards for fish and aquatic life (NR102.02(3)) and recreational use (NR102.02(4)).

FJK:mj
cc: J. Lund - Brule


LAKE SUPE
4" sewer
8" sewer
6" forcemain
main lift station
SLOUGH
PROPOSED DISCHARGE LOCATION
future sewer extension to
ROAD
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ST