



**WOLF RIVER HYDRO LIMITED PARTNERSHIP**

36 Kimberly Drive, Kapuskasing, Ontario P5N 1L5  
ph: 705-335-4098 fax: 705-337-0242

**ORIGINAL**

FILED  
BY THE SECRETARY  
02 APR -1 PM 3: 12  
FEDERAL ENERGY  
REGULATORY COMMISSION

March 17, 2002

Mr. David Boergers, Secretary  
Federal Energy Regulatory Commission  
888 First St., N.E.  
Washington, D.C., USA  
20426

Re: Purple Loosestrife Monitoring Report for Shawano Hydro Project No. P-710

Dear Secretary Boergers:

Enclosed are an original and eight (8) copies of the Purple Loosestrife Monitoring Report for the Shawano Hydro Project in Shawano, Wisconsin. The report describes the purple loosestrife monitoring and removal work conducted in 2001 within the reservoir between the Shawano dam and the bridge in Keshena. The report is being submitted to you in accordance with the FERC Order Modifying and Approving Purple Loosestrife Monitoring Plan, issued May 3, 1999.

On January 22, 2002 copies of the report were given to Mr. Doug Cox of the Menominee Indian Tribe and to Ms. Mary Manydeeds of the Department of Interior – Bureau of Indian Affairs out of Minneapolis. No comments have been received regarding the report.

Should I receive any comments from either the Wisconsin Department of Natural Resources or the U.S. Fish and Wildlife, through this distribution, I will pass the comments on to the FERC.

If you have any questions or comments regarding the enclosed report, please contact me at 705-335-8403 ext. 3377.

Sincerely,

Nelson P. Turcotte

President – Northwoods Hydropower, Inc.  
General Partner – Wolf River Hydro Limited Partnership

0204040406-3

DOCKETED  
*h*

## CERTIFICATE OF SERVICE

I hereby certify that I have placed a true and correct copy of the foregoing in the Canadian Mail on this 18<sup>th</sup> day of March 2002, addressed to the following:

Kimberly A. Owens  
Office of the Solicitor  
Division of Indian Affairs  
1849 C Street, N.W., MS 6456  
Washington, D.C. 20240

Al Stranz  
FERC Project Coordinator  
Wisconsin Dep't of Natural Resources  
1125 North Military Avenue  
Green Bay, WI 54307

Ross Langhurst  
Fisheries Manager  
Wisconsin Department of Natural  
Resources  
647 Lakeland Road  
Shawano, Wisconsin  
54166

Mary Manydeeds  
Bureau of Indian Affairs  
BIA Midwest Regional Office  
Whipple Federal Building  
One Federal Drive, Rm. 550  
Fort Snelling, MN 55111-4007

Douglas Cox, Environmental Specialist  
Menominee Indian Tribe of Wisconsin  
P.O. Box 670  
Keshena, WI 54135

Jim Fossum  
Fish & Wildlife Service  
Green Bay Eco. Serv. Field Office  
Department of the Interior  
1015 Challenger Court  
Green Bay, WI 54311

ORIGINAL

02 APR -1 PM 3: 13  
FEDERAL ENERGY  
REGULATORY COMMISSION

**Purple Loosestrife Monitoring Report  
Shawano Hydroelectric Project  
FERC Project No. 710**

Prepared for:  
Nelson P. Turcotte  
Wolf River Hydro Limited Partnership

Prepared by:  
Christine R. Munson

October 2001

FILED  
SECRETARY  
U2 APR -1 PM 3:13  
FEDERAL ENERGY  
REGULATORY COMMISSION

## Table of Contents

	Page
I. Introduction	3
II. Methods	3
III. Results	4
IV. Discussion	4
V. Conclusion	6

## I. Introduction

According to the Wisconsin Department of Natural Resources (W-DNR), purple loosestrife is a wetland herb that was introduced as a garden perennial from Europe during the 1800's. The plant's reproductive success across North America can be attributed to its wide tolerance of physical and chemical conditions characteristic of disturbed habitats, and its ability to reproduce prolifically by both seed dispersal and vegetative propagation. The absence of natural predators, like European species of herbivorous beetles that feed on the plant's roots and leaves, also contributes to its proliferation in North America.

Purple loosestrife was first detected in Wisconsin in the early 1930's, but remained uncommon until the 1970's. It is now widely dispersed in the state, and has been recorded in 70 of Wisconsin's 72 counties. Areas of heaviest infestation are sections of the Wisconsin River, the extreme southeastern part of the state, and the Wolf and Fox River drainage systems. This plant's optimal habitat includes marshes, stream margins, alluvial flood plains, sedge meadows, and wet prairies. It is tolerant of moist soil and shallow water sites such as pastures and meadows, although established plants can tolerate drier conditions. Purple loosestrife has also been planted in lawns and gardens, which is often how it has been introduced to many of our wetlands, lakes, and rivers (W-DNR 2001).

## II. Methods

The Wolf River Hydro Limited Partnership was surveyed for purple loosestrife (*Lythrum salicaria*) on August 16, 2001. The purpose of the survey was to document individual and conglomerate occurrences of purple loosestrife on the Wolf River. The project area went from the Keshena bridge in Menominee County to 300 yards downstream of the hydroelectric dam in Shawano County.

The survey was executed by a plant biologist and a student from the College of Natural Resources at the University of Wisconsin, Stevens Point. Permission was granted by the Menominee Indian Tribe of Wisconsin to perform the survey on the set date. Plants were just past peak bloom, however, continued to be easily identified by the survey team. The shoreline upstream of the dam was surveyed by slowly boating along the shore. The area downstream of the dam was monitored by foot for a distance of approximately 900 feet. Locations of individual plant occurrences were marked directly on a 1:6000 scale map of the project (*Appendix A*). The map source was the 1:24000 United States Geological Survey digital raster graph of the project area.

Four large stands of purple loosestrife were located during the survey. For each stand, the area was visually estimated and at least three samples were taken to determine percent cover, stem density, and plant density (Table 1). The percent cover was visually estimated by randomly tossing a 1 meter square. One spot occurrence of purple loosestrife was also sampled by this method to document the typical cover characteristics of a single mature plant.

A total of 21 individual purple loosestrife plants, including the root systems when possible, were removed by hand, immediately bagged, and disposed of at the Marathon County landfill located in Ringle, Wisconsin. The locale of removed plants is indicated in *Appendix A*.

### III. Results

**Table 1. Percent cover, plant density, stem density, and stand area of five purple loosestrife stands within the Wolf River Hydro Limited Partnership project area.**

Location	Sample	Percent Cover	Number of Plants	Number of Stems	Stand Area ft <sup>2</sup>
1	A	5 %	1	4	3
2	A	65 %	10	42	1,300
	B	55 %	7	38	
	C	40 %	5	18	
	D	30 %	6	12	
3	A	12 %	2	7	15,000
	B	17 %	4	7	
	C	6 %	1	3	
4	A	85 %	17	59	18,000
	B	10 %	12	18	
	C	53 %	14	30	
	D	35 %	6	19	
5	A	22 %	4	9	10,500
	B	38 %	10	27	
	C	52 %	12	39	
	D	7 %	3	7	

Total stand area is 44,800 square feet.

### IV. Discussion

*Prevalence of Purple Loosestrife: Director Order (B)- The licensee shall annually survey the project reservoir at peak blooming for purple loosestrife.*

Purple loosestrife has a dominant presence in the Wolf River Hydro Limited Partnership project area. Compared to the 1999 survey, stands 2-5 have all increased in stand area. The total estimated stand area is 44,800 square feet compared to the 1999 total of 36,250 square feet. The number of individual spot occurrences also increased, especially in the close proximity of an existing stand. The 1999 survey concluded that stands decreased while spot occurrences increased when compared to 1992. The 2001 survey shows purple loosestrife increasing in both stand area and in the number of spot occurrences.

Stands with percent cover values of 40% and more were associated with high stem counts and low numbers of plants. This indicates the plant put more energy into increasing growth and maturity of existing plants and less into reproduction or establishment of new plants.

*Removal of Purple Loosestrife: Director Order (C)- The licensee shall take appropriate steps to physically remove any purple loosestrife plants at the time of detection from within the project boundary.*

Physical removal of purple loosestrife occurred at 21 locations (*Appendix A*). Soil types included sand, sandy loam, mucky peat, and upland sandy loams. In all locations, plants were removed by hand with great consideration given to other plants in the close proximity. Removal caused slight to great soil disturbance depending on the soil type. In sandy loam, and more so in mucky peat areas, large amounts of sod were uplifted with the root system. Sod and material from other plants were rinsed from the purple loosestrife prior to bagging. The upland area had compacted soils making plant removal difficult.

In the 1999 survey, three sites of physical removal were documented. All three sites of removal had purple loosestrife plants present in 2001.

Due to purple loosestrife's competitive advantages, control by removal is not very effective. According to the W-DNR, "Purple loosestrife spreads mainly by seed, but it can also spread vegetatively from root or stem segments. A single stalk can produce from 100,000 to 300,000 seeds per year. Seed survival is up to 60-70%, resulting in an extensive seed bank. Mature plants with up to 50 shoots grow over 2 meters high and produce more than two million seeds a year. Germination is restricted to open, wet soils and requires high temperatures, but seeds remain viable in the soil for many years. Even seeds submerged in water can live for approximately 20 months." Additionally, vegetative disturbances such as water draw-down or exposed soil can accelerate the spread of purple loosestrife by providing ideal conditions for seed germination. When the right disturbance occurs, loosestrife can spread rapidly, eventually taking over the entire wetland (W-DNR 2001). Therefore, physical removal may actually aid the spread of purple loosestrife in the project area rather than assist in its eradication.

Although prevention is the best control for purple loosestrife, other measures may be taken to limit the influence of the plant. They are mechanical, chemical, and biological control. Biocontrol is now considered the most viable option for more complete control for heavy infestations (W-DNR 2001).

*Education: Director Order (D)- The licensee shall obtain brochures on purple loosestrife from the FWS and place them at access points to the hydropower project*

Brochure holders are located at two public access boat landings on the Wolf River. They are approximately  $\frac{3}{4}$  of a mile upstream from the dam (*Appendix A*). The holders are made of weather proof plastic and mounted on treated wood.

#### *Documentation*

In addition to the existing Purple Loosestrife Monitoring Plan, it may be valuable to take video documentation of the survey area. Standardized taping procedure would be an effective way to visually see how purple loosestrife is occupying the project area over the span of many years.

## V. Conclusion

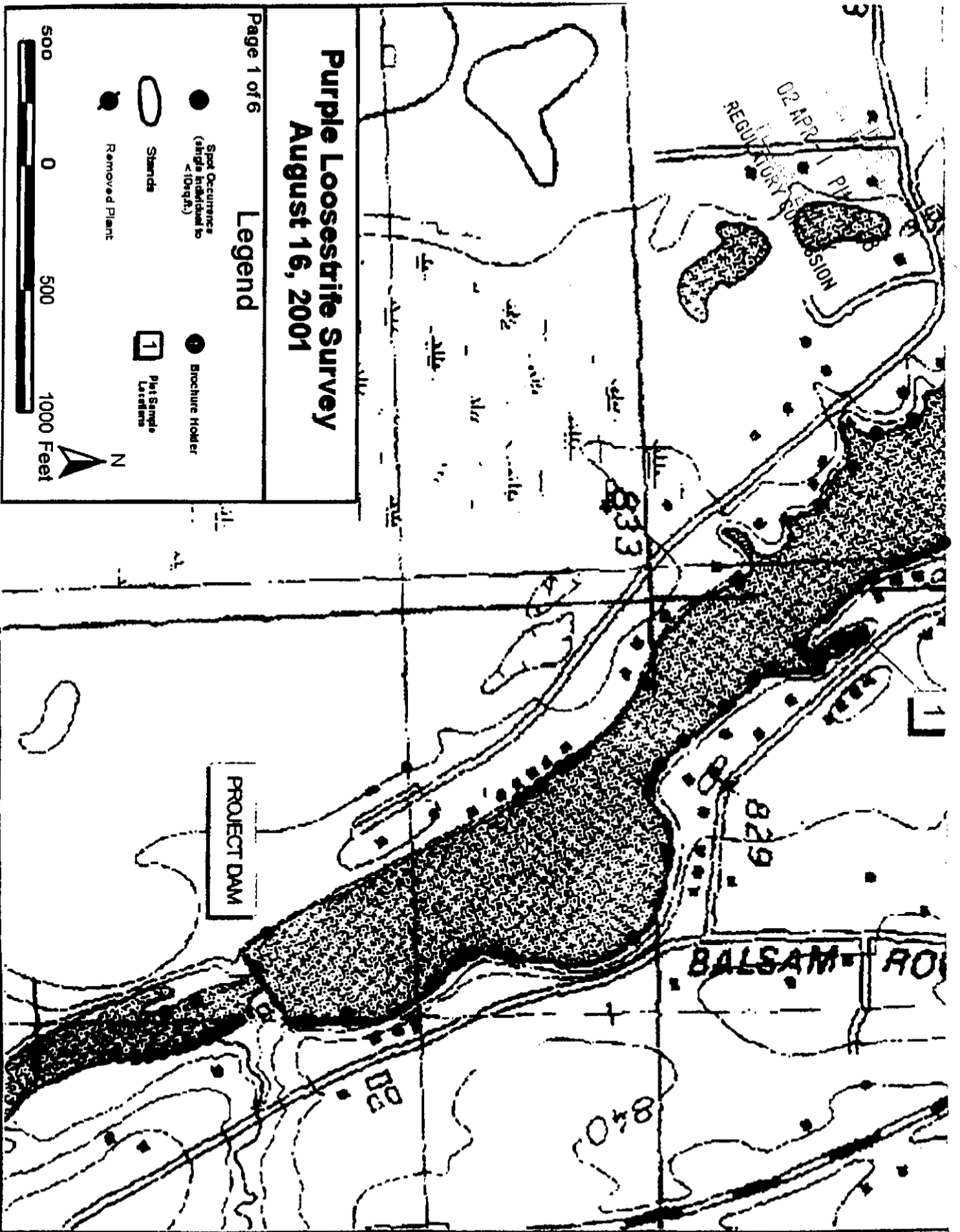
Purple loosestrife has been surveyed and monitored in this project area since 1992. Over that time, the plant has become more established as indicated by stand coverage and spot occurrences. Stand populations were all in wetland habitats with soils containing high organic matter. Spot occurrences were documented in a range of soil conditions. Soil condition had a heavy role in the ease and effectiveness of plant removal. Hand removal may not be an effective method in control of the purple loosestrife populations within the project boundary. It may even lead to the establishment of more purple loosestrife. Finally, a visual documentation of purple loosestrife within the project boundary may be beneficial for scientific and education purposes.

---

### Literature Cited

Wisconsin Department of Public Instruction. 2001. Purple Loosestrife (*Lythrum salicaria*). <http://www.dnr.state.wi.us/org/land/er/invasive/factsheets/loose.htm>.





Purple Loosetrie Survey  
August 16, 2001

Page 2 of 6 Legend

● Spot Occurrence  
(Average Individual to  
x103 & R.)

● Brochure Holder

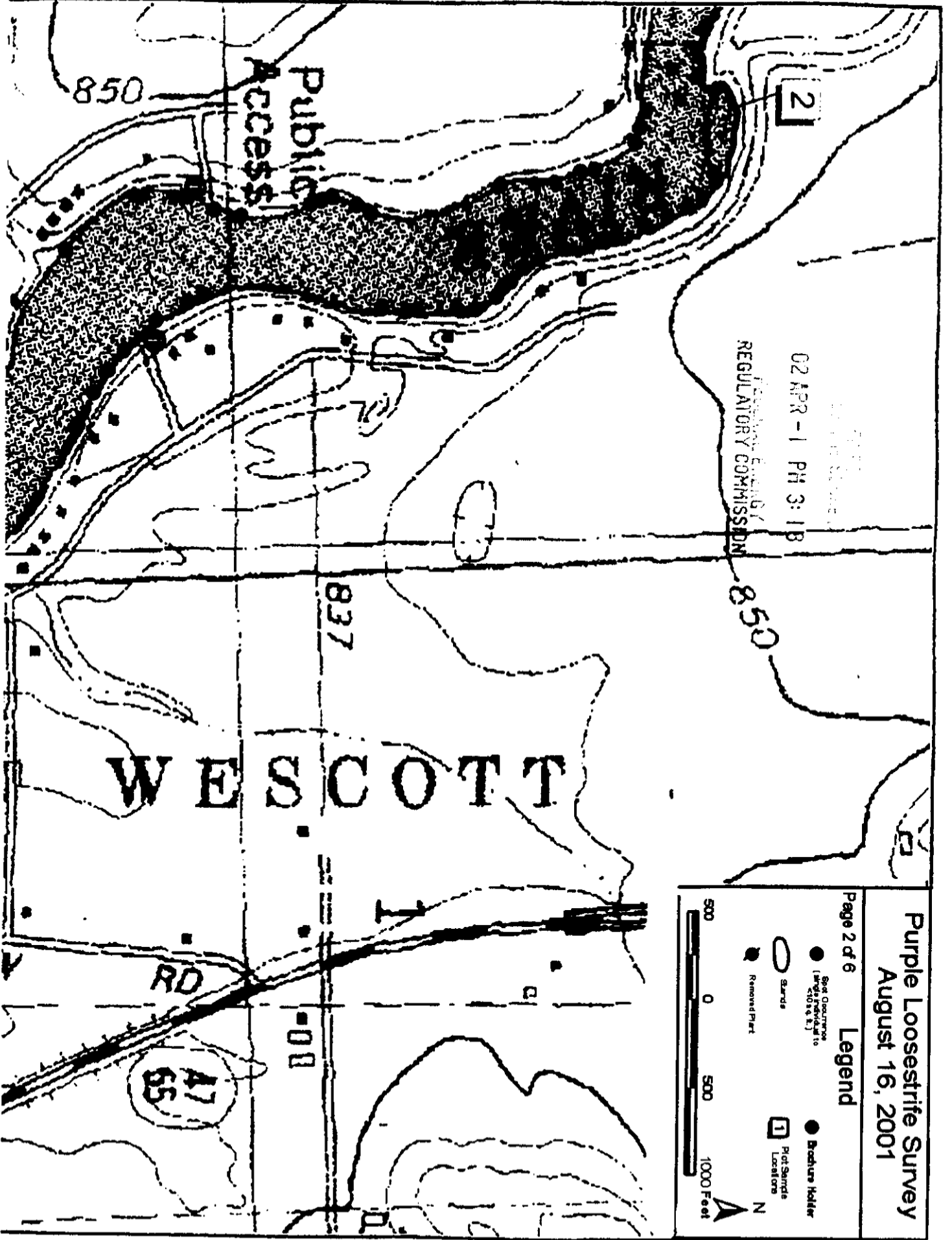
○ Sand

□ Pit Sand  
Location

● Removed Plant

500 0 500 1000 Feet

N



02 APR - 1 PM 3:13  
FEDERAL ENERGY  
REGULATORY COMMISSION

MENOMINEE CO  
JHAWANO CO

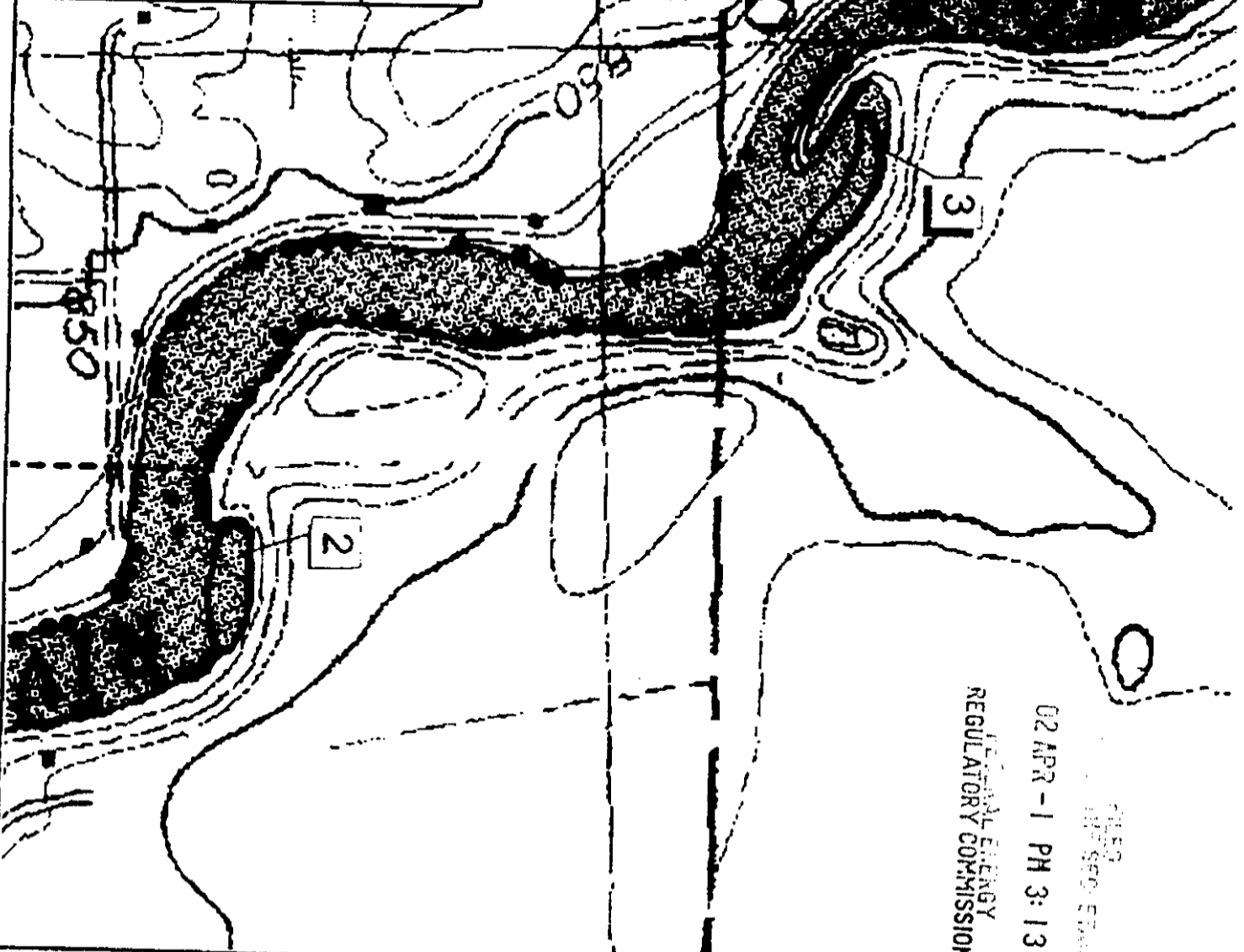
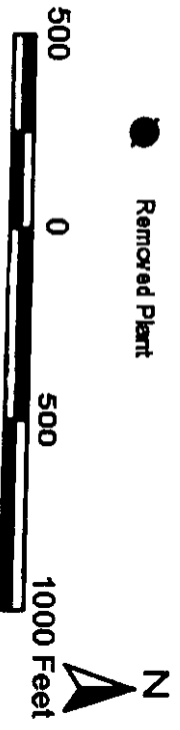
# Purple Loosetrife Survey

August 16, 2001

Page 3 of 6

## Legend

- Spot Occurrence (single individual to <10 sp. ft.)
- Stands
- Removed Plant
- Brochure Holder
- 1 Pit Sample Locations

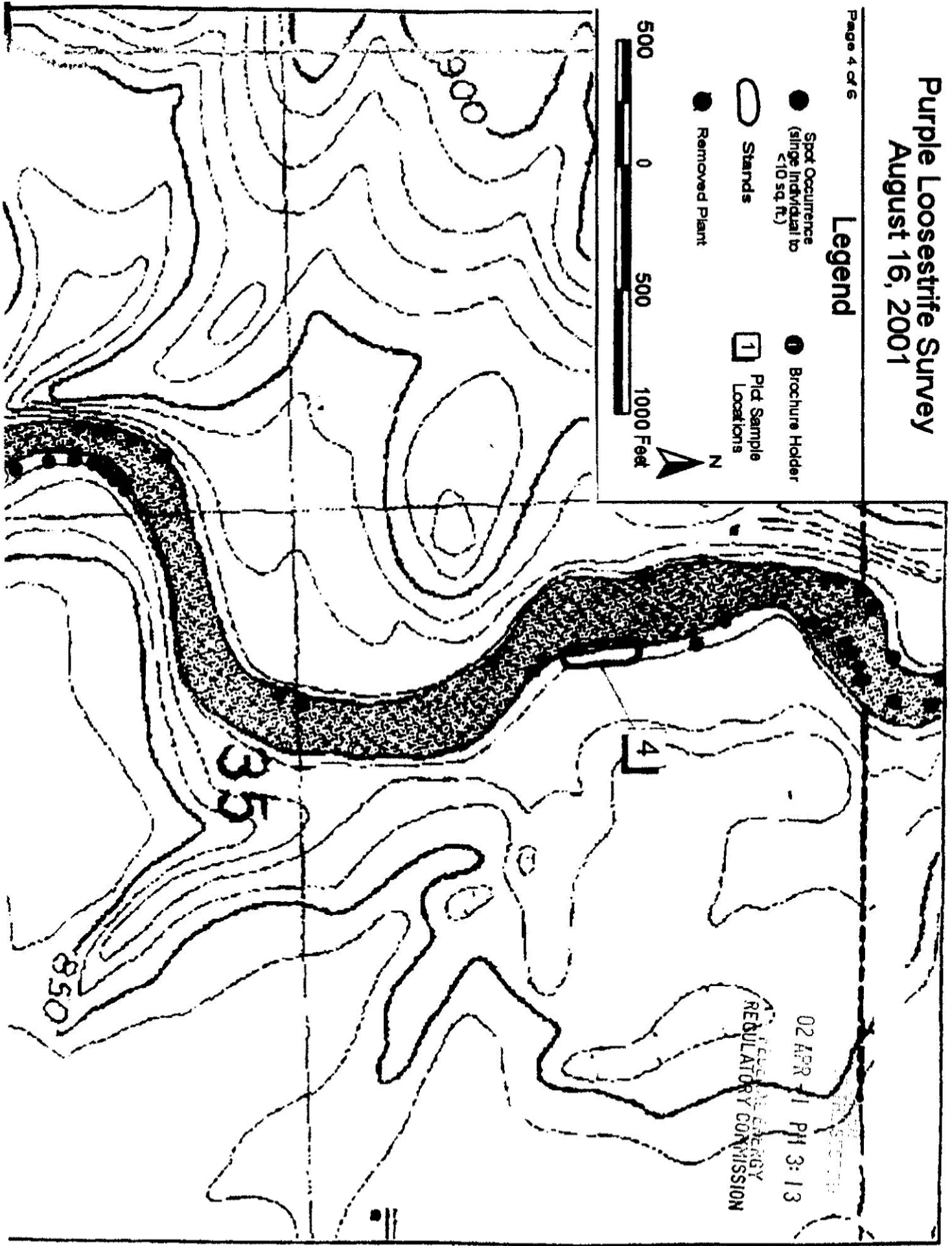


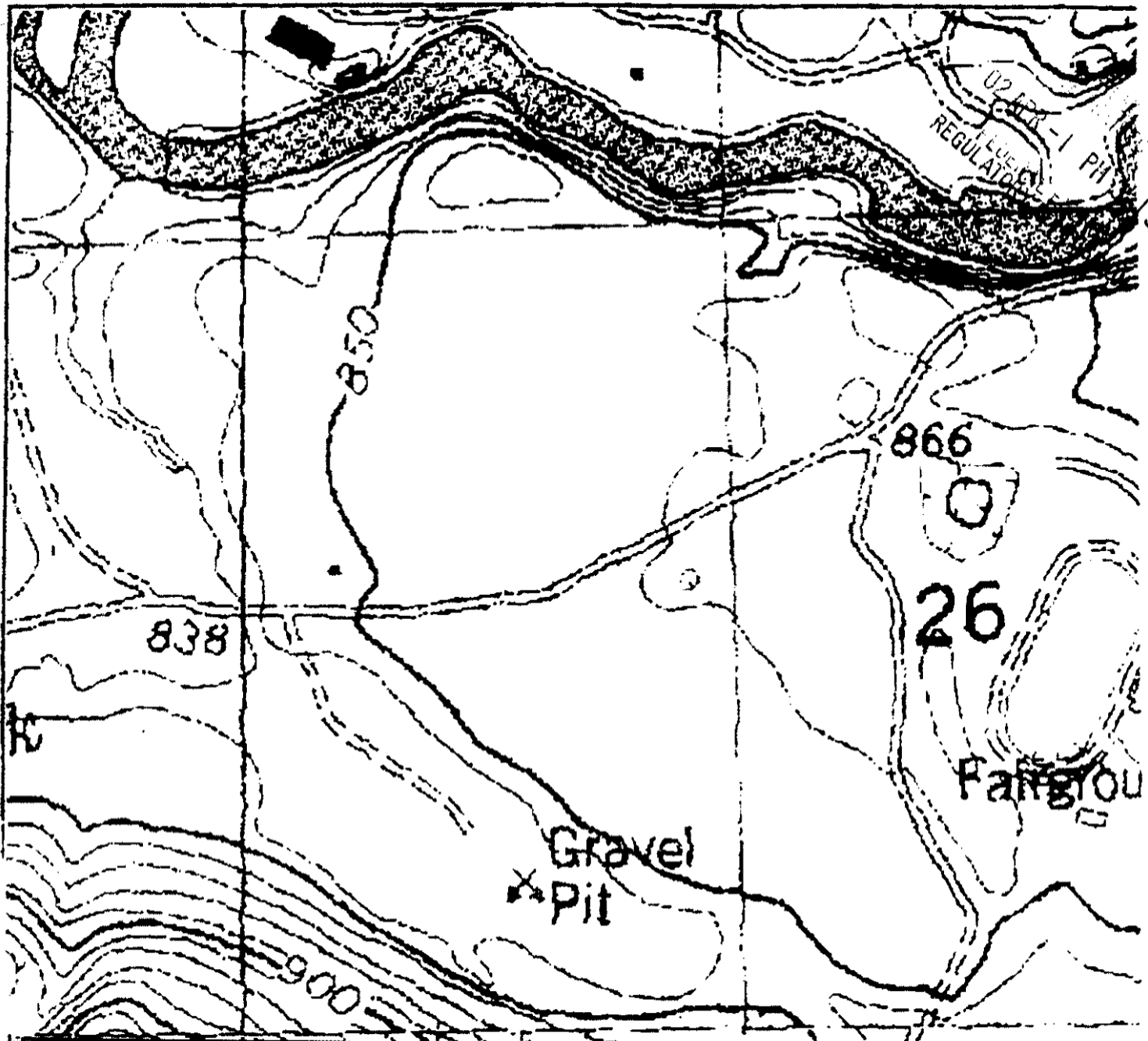
# Purple Loosetrife Survey

August 16, 2001

## Legend

- Spot Occurrence (single individual to <10 sq. ft.)
- Brochure Holder
- Stands
- Pict Sample Locations
- Removed Plant





**Purple Loosestrife Survey  
August 16, 2001**

Page 5 of 6

**Legend**

- Spot Occurrence (single individual to <10 sq. ft.)
- Stands
- Removed Plant
- ① Brochure Holder
- 1 Plot Sample Location



26

Fangrou

26

866

850

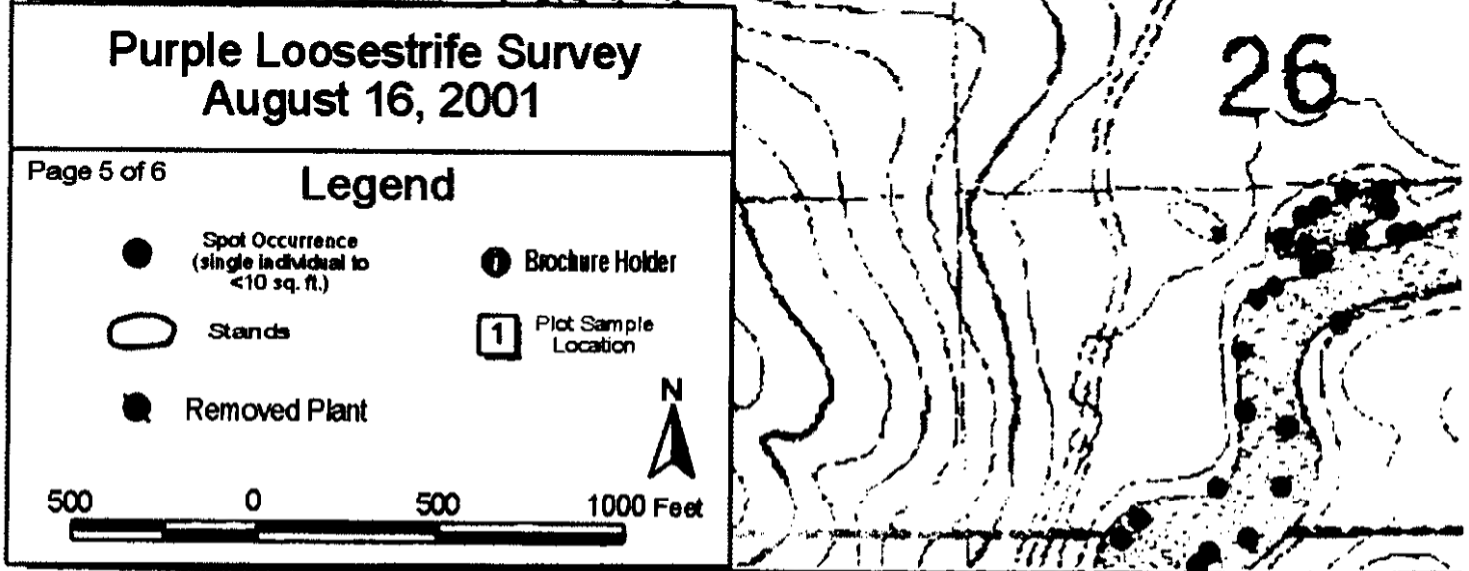
838

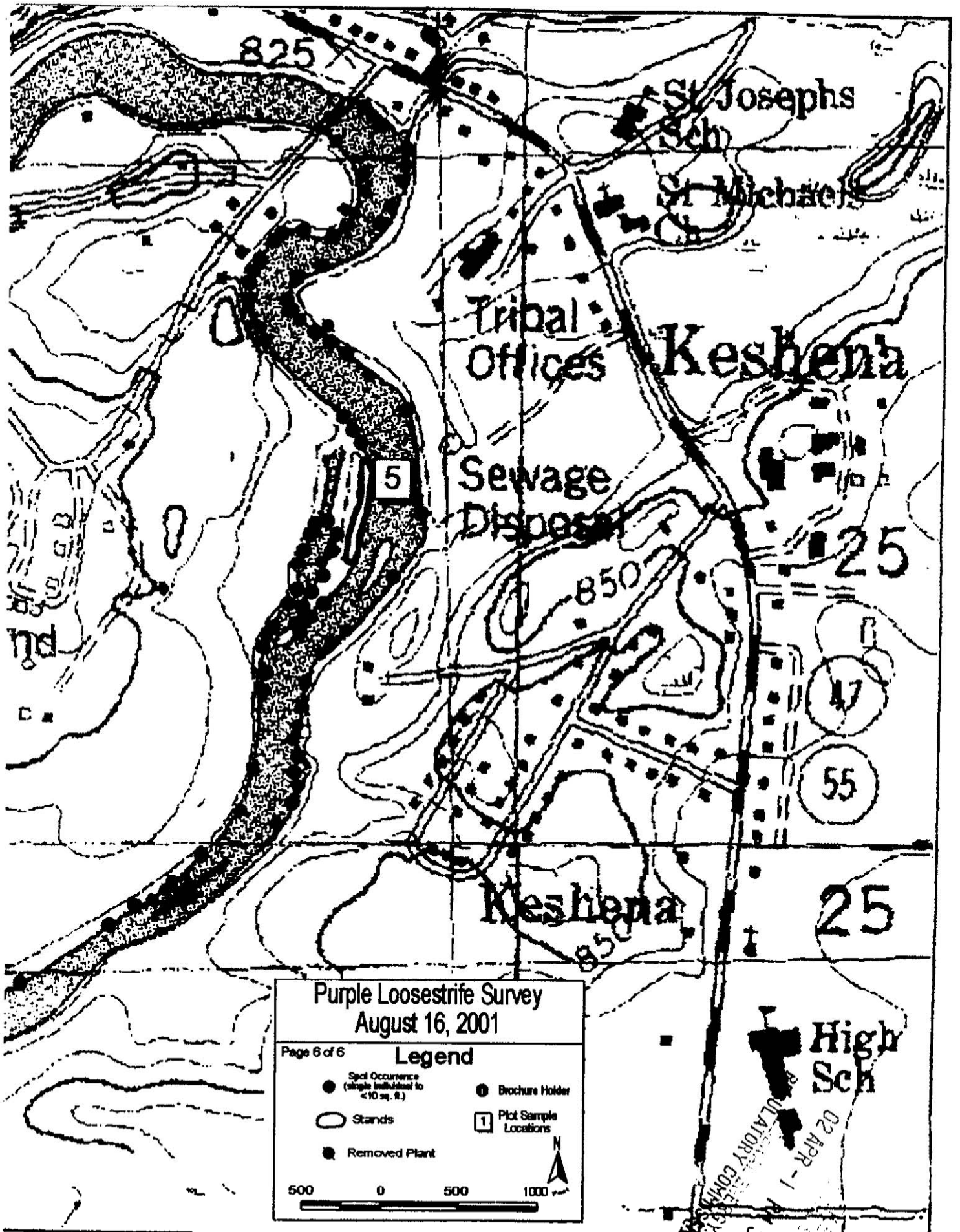
Gravel Pit

REGULATOR

UP  
C  
- 1  
PH

3





Purple Loosestrife Survey  
August 16, 2001

Page 6 of 6

Legend

- Spot Occurrence (single individual to <10 sq. ft.)
- Stands
- Removed Plant
- ① Brochure Holder
- Plot Sample Locations

500 0 500 1000 feet



High Sch

02 APR - 1  
LABORATORY COMMISSION