ORIGINAL

Nekoosa Papers Inc.
a subsidiary of
Georgia-Pacific Corporation

Environmental Affairs
October 13, 1998

Ms. Janet M. Smith
Field Supervisor
United States Department of the Interior
Green Bay Field Office
1015 Challenger Court
Green Bay, WI 54311-8331

Mr. Robert Martini
FERC Relicensing Manager
Department of Natural Resources
P. O. Box 818
Rhinelander, WI 54501

Dear Ms. Smith and Mr. Martini:

034 035 035

Subject: Nekoosa Papers Inc.
FERC Projects 2255, 2291, and 2292
Centralia, Port Edwards, and Nekoosa Projects
Purple Loosestrife Monitoring

Attached is a report for purple loosestrife monitoring as required by Article 408 for projects 2255 and 2291, and by Article 407 for project 2292. A single report for the three projects has been prepared.

The survey is required on an annual basis, but the reporting is due on a biennial basis. However, we have chosen to send the reports as they are received. The survey was performed substantially as described in the plan submitted to the FERC Secretary on January 13, 1997, and as approved by FERC on July 16, 1997. The 1998 survey was performed during July and August during blooming of the plant.

The one exception of the actual survey to the plan was that NPI contracted Dr. Robert W. Freckmann from the University of Wisconsin-Stevens Point to conduct the survey as opposed to using trained NPI employees.

If there are any questions, please feel free to contact me at (715) 886-7481.

Sincerely,

Robert W. Gause
Manager of Environmental Affairs

RWG:kd

cc: Federal Energy Regulatory Commission, Chicago Regional Office, 230 South Dearborn Street, Room 3130, Chicago, IL 60604

Secretary, Federal Energy Regulatory Commission, 888 First Street, N.E., Washington, DC 20426

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Port Edwards, Wisconsin 54469-1492 (715) 886-7481 Fax: (715) 886-7406

PURPLE LOOSESTRIFE MONITORING SURVEY FOR 1998

prepared September 25, 1998 for

Nekoosa Papers, Inc.,
a subsidiary of Georgia-Pacific Corporation

by

Flark Associates, Inc.
8221 100th Street South
Wisconsin Rapids, Wisconsin 54494

Principal Investigator: Robert W. Freckmann, Ph. D.
Professor of Biology and Curator of Vascular Plants
University of Wisconsin – Stevens Point

BACKGROUND:

During July and August, 1997, Flark Associates, Inc. conducted a survey for the occurrence of *Lythrum salicaria* L., purple loosestrife, within the project boundary lands as designated on the Nekoosa Papers, Inc. Project Boundary Location Drawings Numbers DC 305, DC 306, DC 307, DJ 2894, DJ 2740, and DN 2341. During that period the principal investigator covered on foot almost the entire west side of the Wisconsin River from Wisconsin Rapids through to the boundary area south of Nekoosa, as well as most of the east side of the Wisconsin River and the islands accessible by bridges. The portion of the River north of the Nekoosa dam to the Port Edwards hydro-electric plant was surveyed by boat on August 9, 1997. The principal investigator made general notes on the vegetation and took black and white or color photographs at various locations to document either the general nature of the vegetation in areas free of purple loosestrife at that time, or to show representative areas of purple loosestrife infestations as of 1997. The locations of the purple loosestrife plants were marked on the Project Boundary Location Drawings and on a reduced photocopy of these drawings. The results of this survey were summarized in a report prepared on September 4, 1997 and submitted to Georgia-Pacific.

METHODS:

During July and August, 1998, the principal investigator conducted a survey for purple loosestrife within the same project boundary lands which were surveyed in 1997. One of the objectives of the 1998 survey was to duplicate the coverage of 1997 to eliminate variation due to methods so that the results would reflect actual changes in purple loosestrife distribution. The investigator carried copies of the drawings submitted

with the previous report and marked 1998 purple loosestrife occurrences directly on these 1997 drawings. He also revisited sites where photographs were taken in 1997 and took new photographs for comparison. Any major changes in the vegetation at any site from 1997 to 1998 were noted. One addition was made in the 1998 survey. Several purple loosestrife populations were examined to determine whether the populations consisted of plants of all the same style length or of two or three style lengths, and to note indications of maturing seed. The only major part of the 1997 survey which was not repeated was the survey by boat between the Nekoosa dam and the Port Edwards hydro-electric plant. This part of the Wisconsin River was surveyed by binoculars from shore in 1998.

DESCRIPTIONS OF THE PURPLE LOOSESTRIFE POPULATIONS IN 1998:

As noted in the 1997 report, much of the land shown on drawing DC-305 is residential and neither the neighborhood nor the vegetation appears to have changed during the past year. Purple loosestrife plants had been uprooted at four locations on the west bank of the Wisconsin River during the 1997 survey. Two of these sites were free of purple loosestrife in 1998, but new plants were found at the other two sites. One well-established population in 1997 appeared to be unchanged in 1998 and three new populations were noted.

All of the new populations consisted of only long-styled plants. The flowers of purple loosestrife are composed of 5, 6, or 7 erect clawed petals surrounded by the same number of sepals, and these combine to form a tube. Nectar is produced at the base of this tube. Most insects visiting the flowers probe head-downward for the nectar while their head, thorax, and abdomen typically contact anthers or stigmas. A purple loosestrife plant can have one of three arrangements of anthers and stigmas. A short-styled plant has the stigma at a level which is apt to contact the head of a typical pollinator and pick up any pollen present on the insect's head. Half of the 10-14 anthers are on medium length filaments and tend to deposit pollen on the thorax of the insect; the other half of the anthers are on long filaments and tend to deposit pollen on the abdomen. A medium-styled plant has stigmas at a level where it tends to contact the thorax, and anthers on short and long filaments where they tend to deposit pollen on the head and abdomen. A long-styled plant can pick up pollen from the abdomen and deposit pollen on the head and thorax. Pollinators visiting flowers of the same style lengths tend to pick up pollen on the same parts of the body and transfer little to the stigmas. Therefore, isolated populations of plants with the same style length produce little seed; populations with two or three style lengths are apt to be the main sources of purple loosestrife seed. Only the population on the west bank opposite Pete Rogers' Island has two style lengths – long and medium.

The area in drawing DC-306 includes only two large populations of purple loose-strife. The population on the west bank opposite Garrison Island includes plants of all three style lengths and may be a major source of seed. The other population is associated with the Centralia dam and includes mostly long-styled plants with some medium-styled individuals. Both populations appear to be unchanged from the 1997 survey. Three

small populations were removed in 1997 and have not returned this year. However, three new plants have appeared on the Masonic Lodge grounds on the south bank of Boles Creek and the River and a new plant was noted on an inaccessible rock outcropping near Edwards Island.

The hiking and biking trail area in DC-307 continues to be free of purple loosestrife.

The purple loosestrife population on the headwaters dam in DJ-2894 is conspicuously reduced from 1997, but short and long-styled plants are now common on soil amid concrete structures west of the dam. The populations noted in the 1997 survey on the west bank above the Port Edwards hydro-electric plant seem to be about the same size. A few places where plants were removed in 1997 are free of loosestrife, but some new plants have appeared elsewhere.

The total population of purple loosestrife in the area of DN-2740 does not appear to show any net change. The plants are moderately common, but scattered, with at least two new small populations on the north bank of the River near the parking lot. However, two of the four areas where plants were removed in 1997 now have new plants. These two areas have open disturbed ground with good opportunity for plants to colonize.

No notable change in purple loosestrife density or distribution has occurred in one year in the Nekoosa area indicated on drawing DN-2341, except on the west bank of the River north of the highway 173 bridge. Here the loosestrife has almost vanished, apparently as a result of the growth of black locust and sumac, which have shaded it. It is still absent on the west bank down river from the Nekoosa dam, but a few plants are now established on rock outcroppings on the east side of the River.

CONCLUSIONS

In the opinion of the principal investigator, purple loosestrife is not as abundant in the Wisconsin Rapid – Port Edwards – Nekoosa area as it is in most wetlands and along most rivers and roadsides in the more developed or ecologically disturbed areas in central Wisconsin.

In general, the net abundance of purple loosestrife appears to have remained about the same as that noted in the 1997 survey. The population has diminished at a few places, such as on the dam at Port Edwards or north of the highway 173 bridge, but these reductions are more-or-less offset by the larger population near the Port Edwards dam and by new plants scattered primarily along the west bank.

Perhaps the most important observation from the 1997 and 1998 surveys is that the purple loosestrife is most apt to invade open, disturbed areas, and especially bare ground. All the large populations of purple loosestrife are found in open areas. In several cases where isolated plants were removed in 1997, new plants have taken their place. Seed of this species is probably spread by the river as well as by clinging to mud

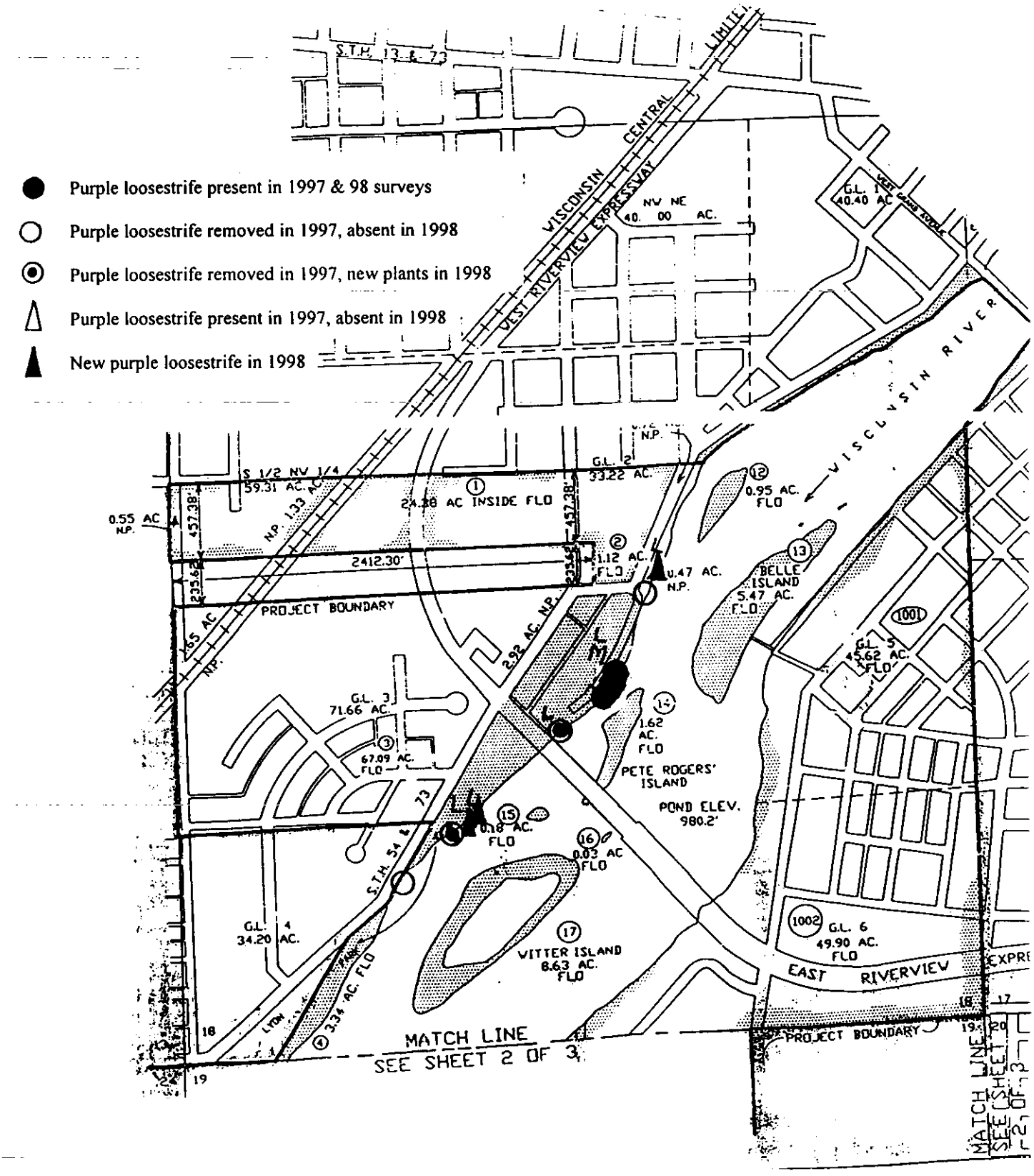
on birds, boats, clothing, etc. and the seedlings are more likely to thrive in the absence of tall competing native vegetation.

Removing isolated plants apparently has little value as long as the site is favorable to the seedlings. Furthermore, the 1998 survey showed that the more isolated populations often consisted of plants of only one style length, and these presumably produce little seed compared with the larger populations with two or more style lengths present.

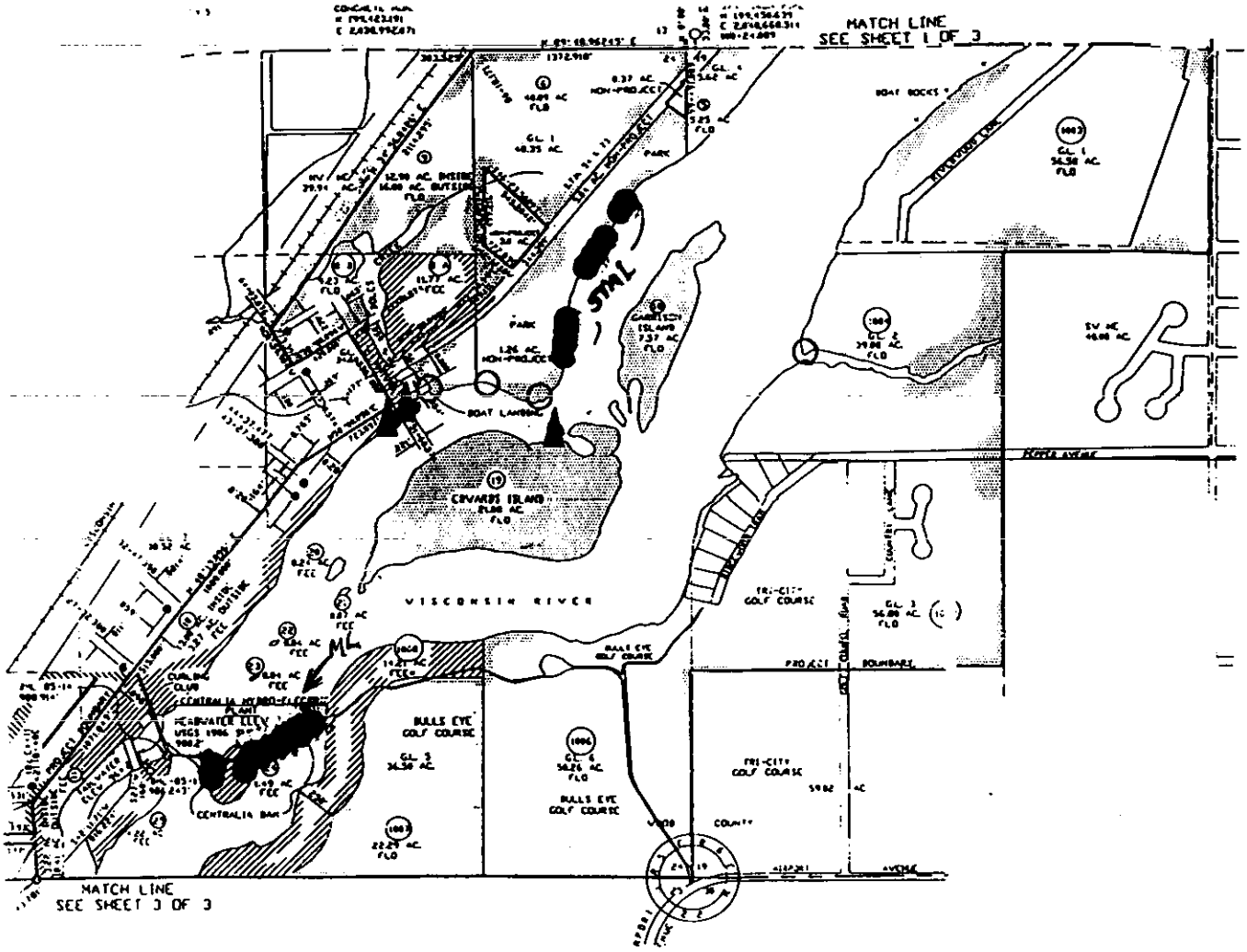
In contrast with the west bank, almost all of the east side of the Wisconsin River and much of the shore of some of the island have a closed canopy of trees and few homes or other developments. No purple loosestrife was seen in these areas in 1998 and no plants have reappeared at the site south of the end of Riverview Lane where they were removed in 1997. Maintaining a closed canopy and natural vegetation may be the best way of preventing a heavy purple loosestrife infestation on this side of the River.

Finally, almost all of the purple loosestrife plants on the east side of the River are on rock outcroppings in the River. These would be difficult to remove, and, given the open nature of the habitat, new plants would likely replace them. At present, it seems that little can be done about the purple loosestrife population on these rock outcroppings.

DRWG DC-305


Purple loosestrife present in 1997 & 98 surveys
Purple loosestrife removed in 1997, absent in 1998
Purple loosestrife removed in 1997, new plants in 1998
Purple loosestrife present in 1997, absent in 1998
New purple loosestrife in 1998
S.T.H. 13 & 73
CENTRAL
WISCONSIN
WEST RIVERVIEW EXPRESSWAY
NV NE 40.00 AC.
G.L. 1 40.40 AC
WEST GRAND AVENUE
WISCONSIN RIVER
N.P.
S 1/2 NV 1/4 59.31 AC.
G.L. 2 33.22 AC.
24.38 AC INSIDE FLD
0.55 AC N.P.
457.38'
N.P. 1.33 AC.
2412.30'
1.12 AC. FLD
0.47 AC. N.P.
0.95 AC. FLD
BELLE ISLAND 5.47 AC. FLD
PROJECT BOUNDARY
2.92 AC. N.P.
G.L. 5 45.62 AC. FLD
G.L. 3 71.66 AC.
67.09 AC. FLD
1.62 AC. FLD
PETE ROGERS' ISLAND
POND ELEV. 980.2'
0.18 AC. FLD
0.03 AC FLD
S.T.H. 54
G.L. 4 34.20 AC.
3.34 AC. FLD
VITTER ISLAND 8.63 AC. FLD
G.L. 6 49.90 AC. FLD
EAST RIVERVIEW EXPRESSWAY
MATCH LINE
SEE SHEET 2 OF 3
PROJECT BOUNDARY
MATCH LINE SEE SHEET 2 OF 3

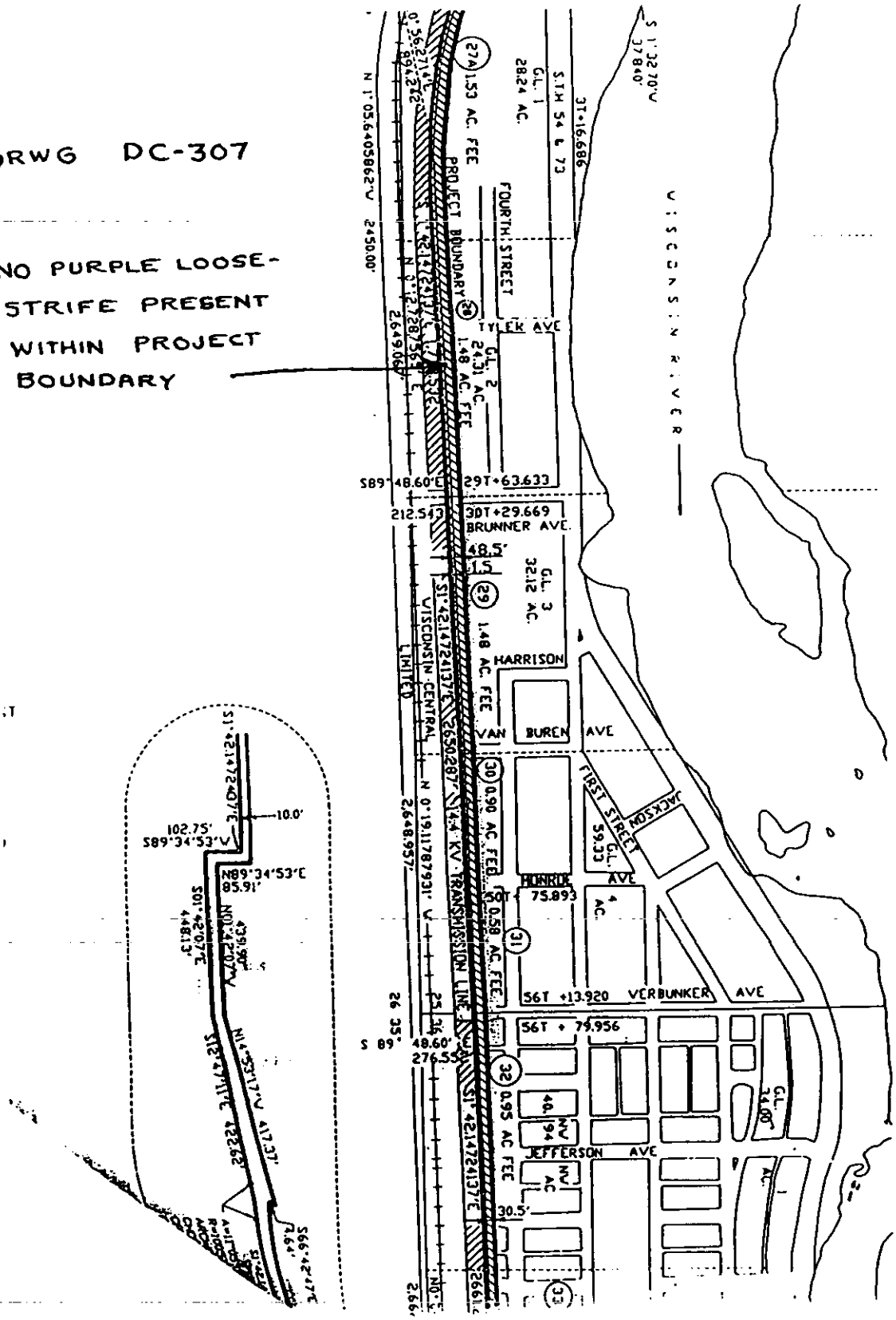
DRWG DC-306



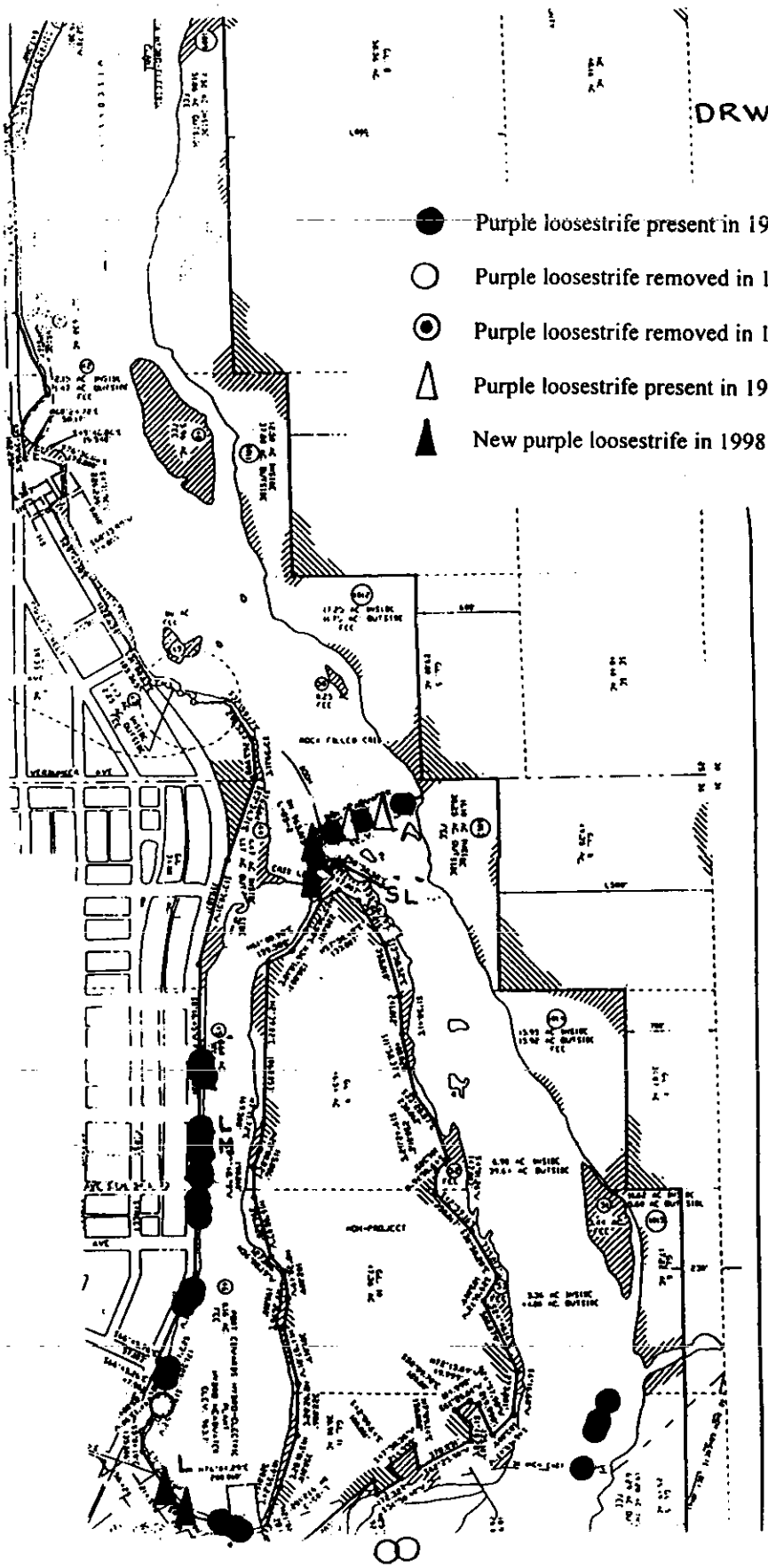
- Purple loosestrife present in 1997 & 98 surveys
- Purple loosestrife removed in 1997, absent in 1998
- Purple loosestrife removed in 1997, new plants in 1998
- Purple loosestrife present in 1997, absent in 1998
- New purple loosestrife in 1998

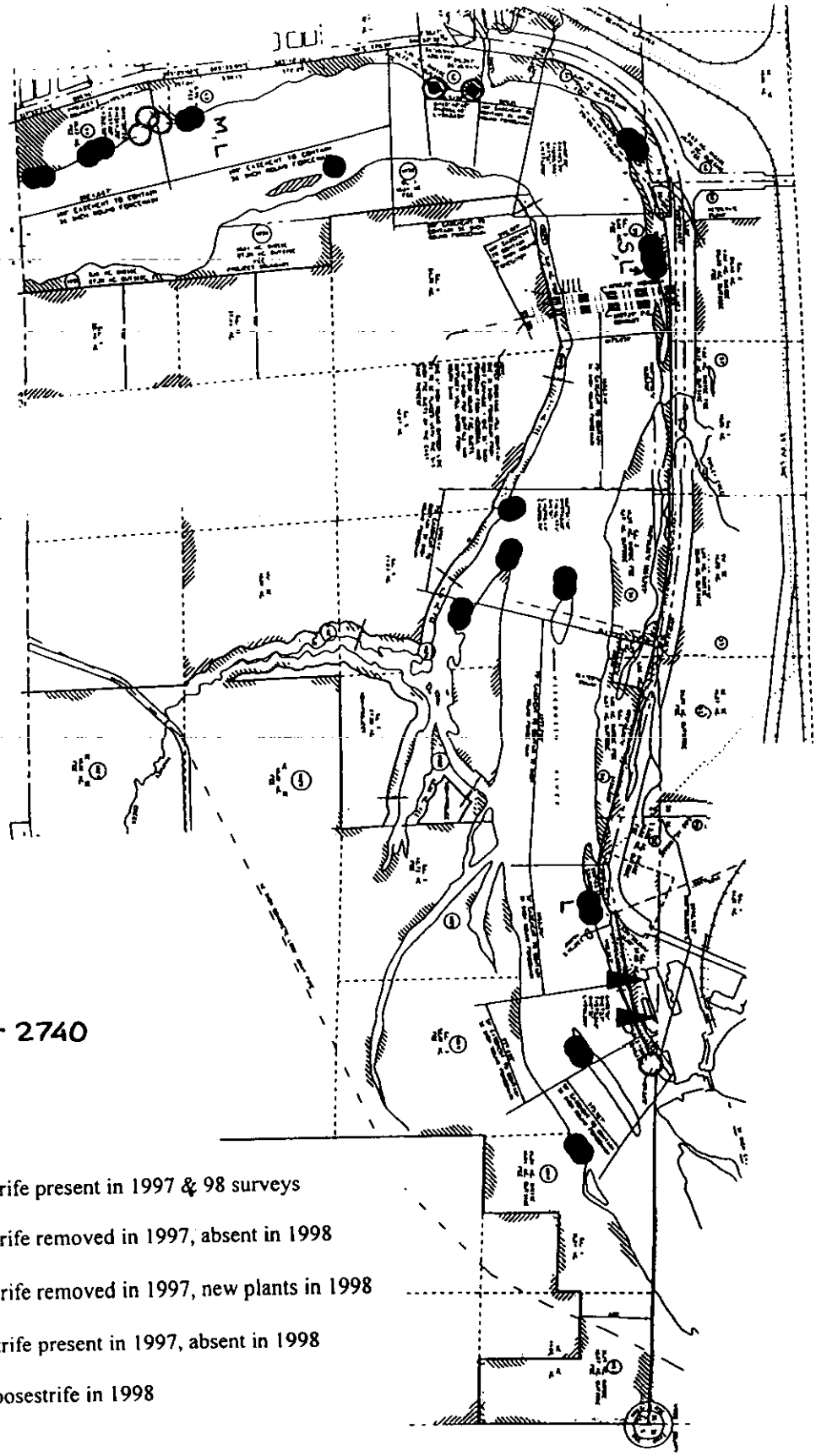
DRWG DC-307

NO PURPLE LOOSE-STRIFE PRESENT WITHIN PROJECT BOUNDARY



DRWG DJ 2894

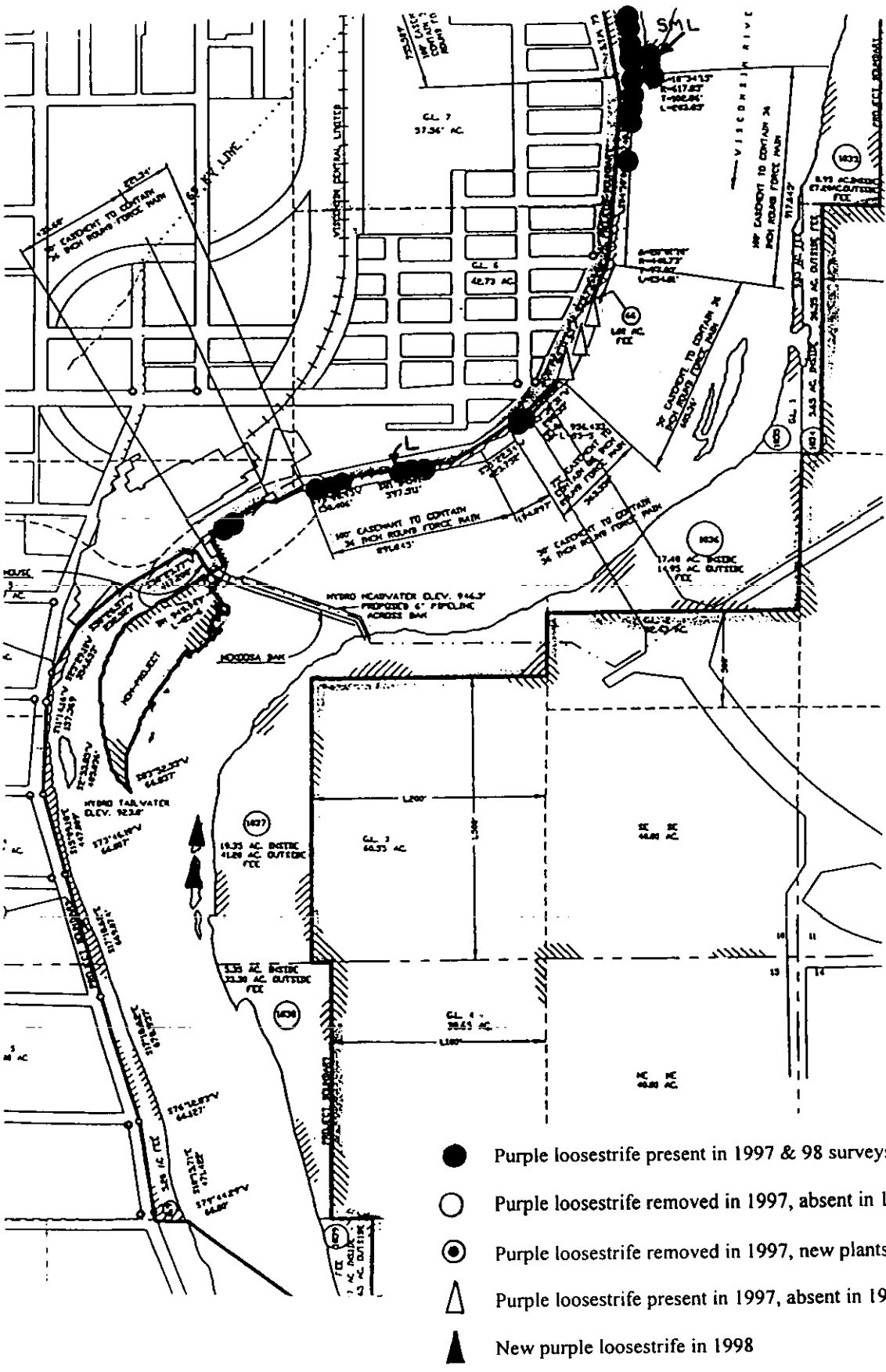

Purple loosestrife present in 1997 & 98 surveys
Purple loosestrife removed in 1997, absent in 1998
Purple loosestrife removed in 1997, new plants in 1998
Purple loosestrife present in 1997, absent in 1998
New purple loosestrife in 1998



DRWG DN-2740

- Purple loosestrife present in 1997 & 98 surveys
- Purple loosestrife removed in 1997, absent in 1998
- Purple loosestrife removed in 1997, new plants in 1998
- Purple loosestrife present in 1997, absent in 1998
- New purple loosestrife in 1998

DRWG DN-2341


S/L
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Purple loosestrife present in 1997 & 98 surveys
Purple loosestrife removed in 1997, absent in 1998
Purple loosestrife removed in 1997, new plants in 1998
Purple loosestrife present in 1997, absent in 1998
New purple loosestrife in 1998

Fig. 1. West side of Belle Island, 1997. No purple loosestrife.

Fig. 2. West side of Belle Island, 1998. No purple loosestrife.

Fig. 3. West side of Witter Island, 1997. No purple loosestrife.

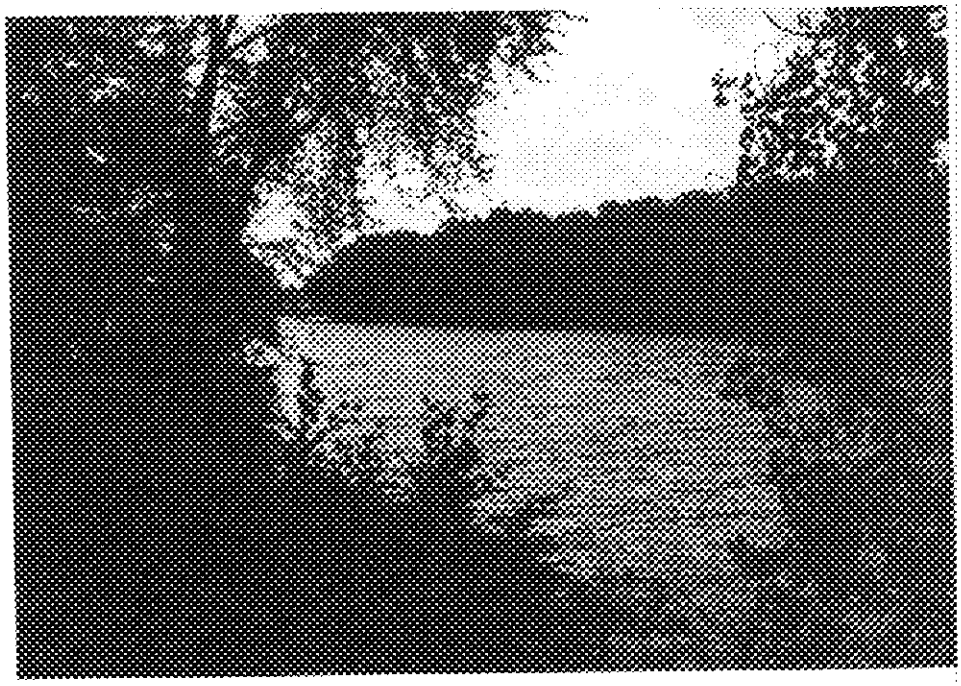

Fig. 4. West side of Witter Island, 1998. No purple loosestrife.

Fig. 5. West side of Witter Island, 1997. No purple loosestrife.

Fig. 6. West side of Witter Island, 1998. No purple loosestrife.

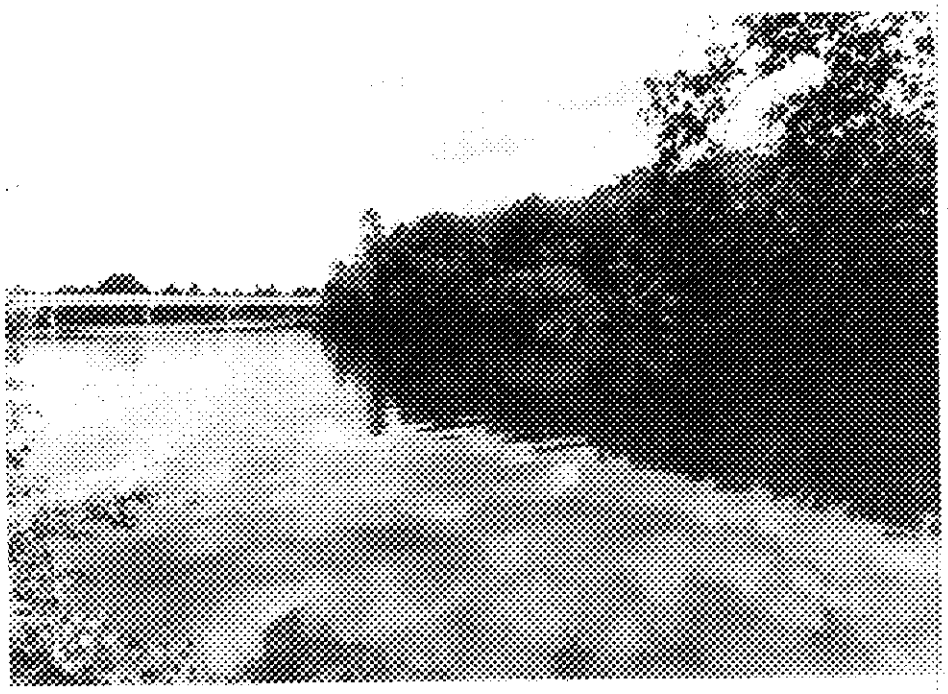

Fig. 7. West side of Witter Island, 1997. No purple loosestrife.

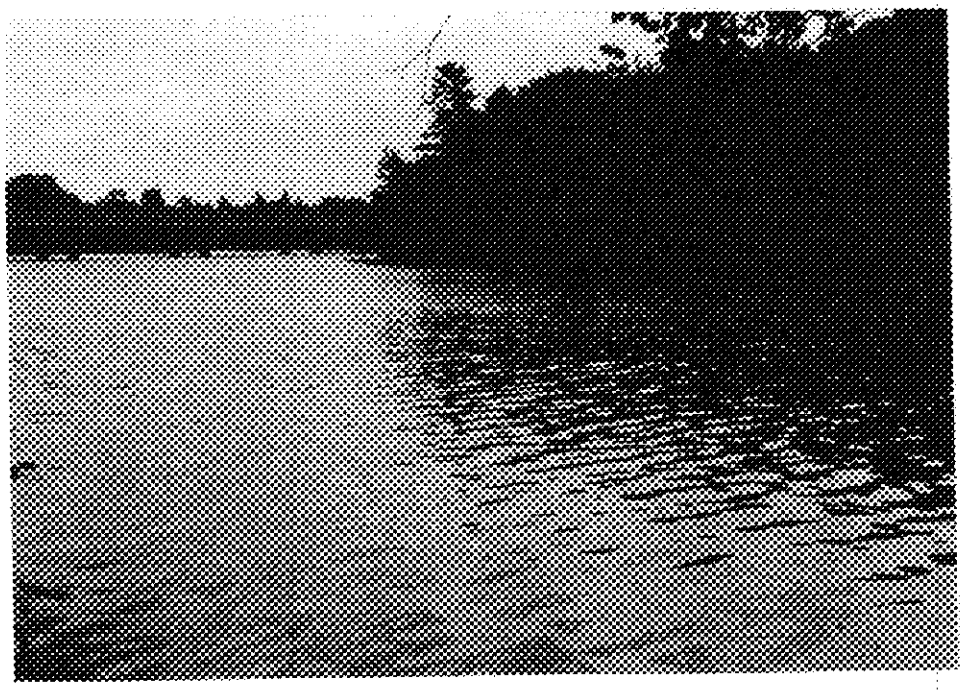

Fig. 8. West side of Witter Island, 1998. No purple loosestrife.

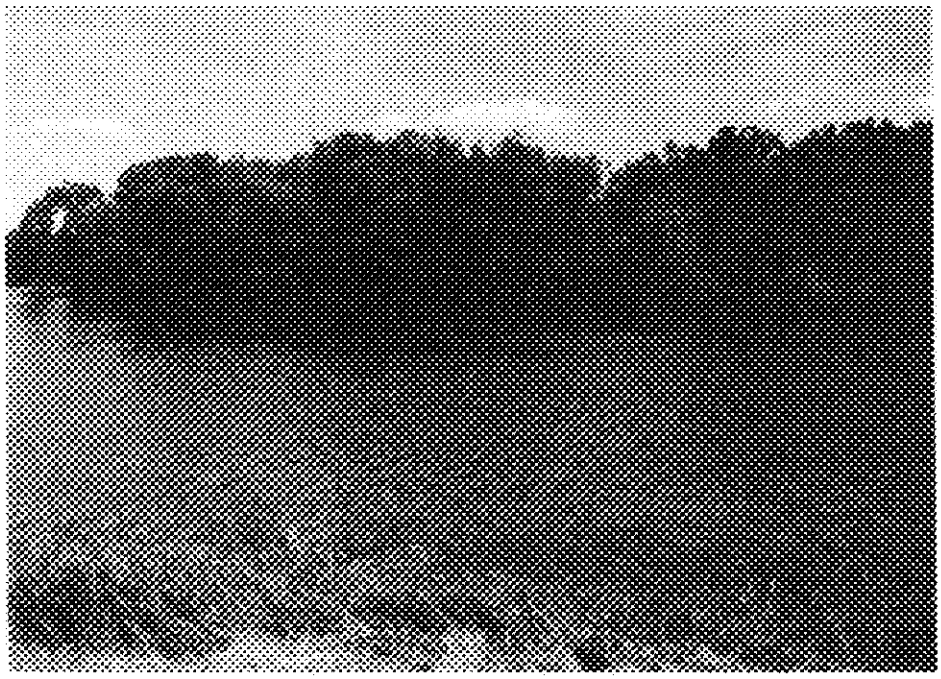

Fig. 9. North end of Garrison Island, 1997. No purple loosestrife.

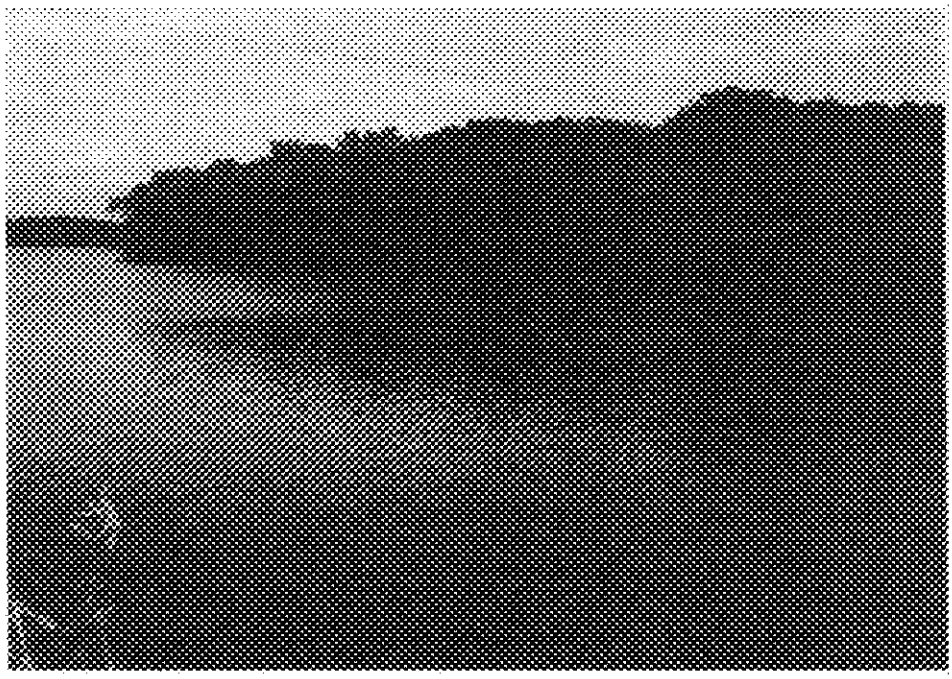

Fig. 10. North end of Garrison Island, 1998. No purple loosestrife.

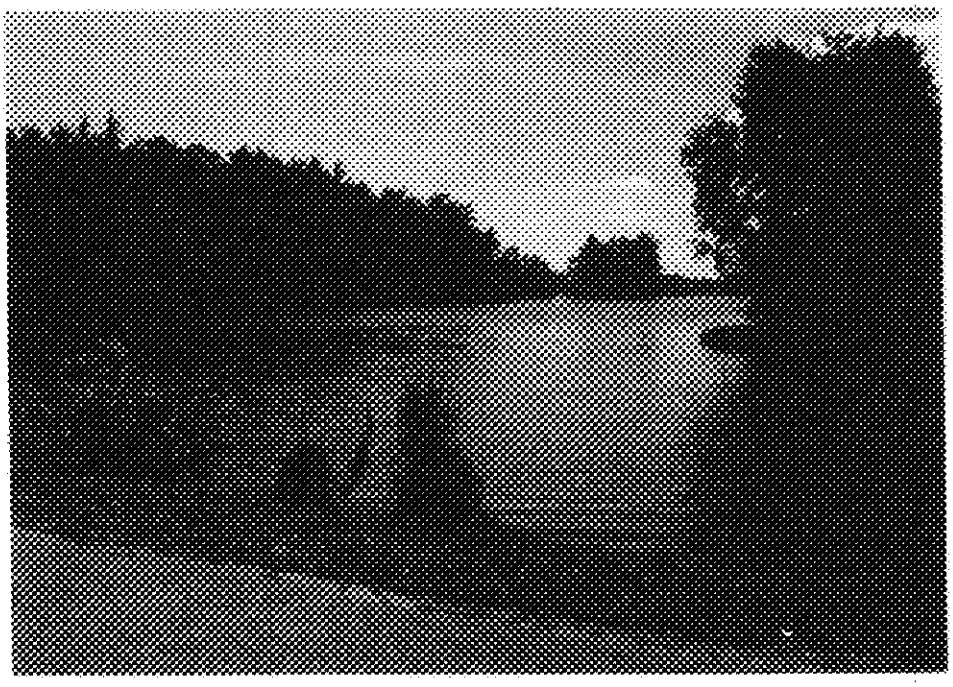

Fig. 11 West side of Wisconsin River looking toward Edwards Island, 1997. One purple loosestrife plant in foreground.

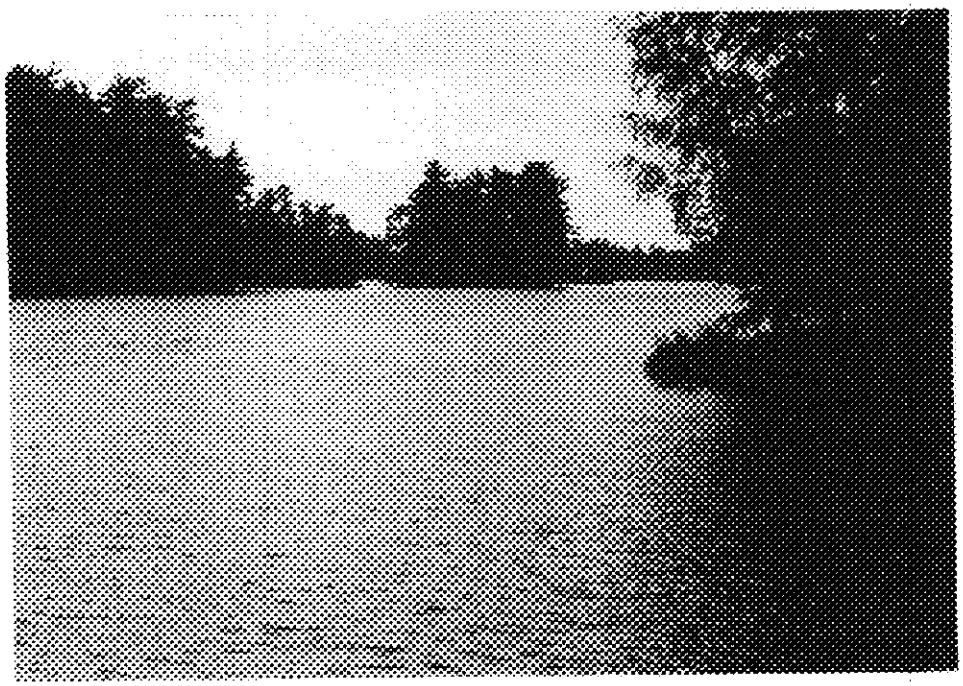

Figure 12 West side of Wisconsin River looking toward Edwards Island, 1998. Purple loosestrife plant was removed after 1997 photograph was taken and no new plants have returned here.

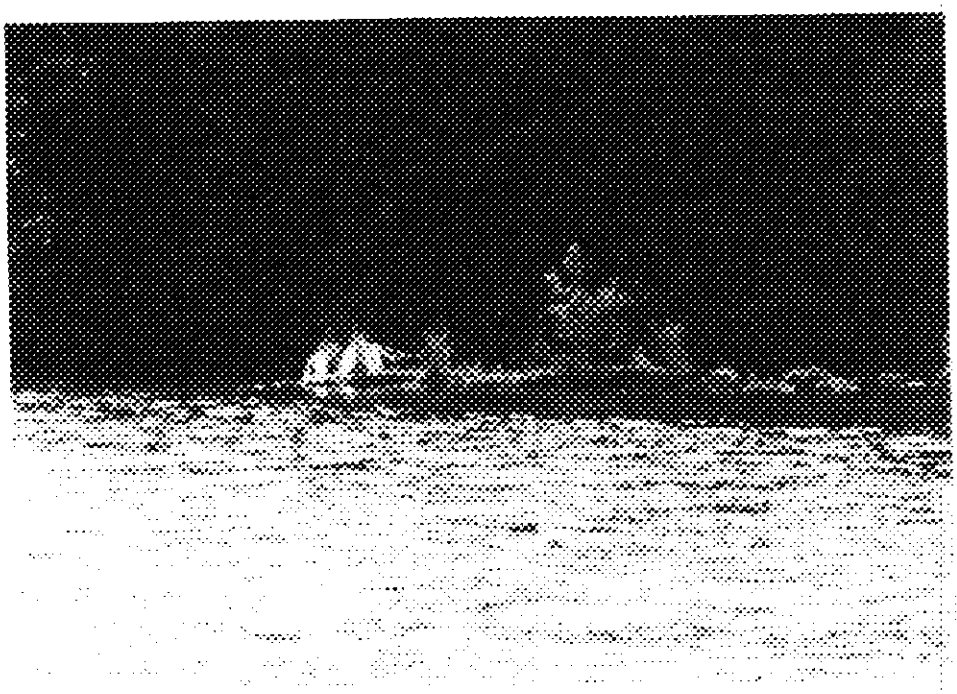

Fig. 13. A small rock outcropping near Edwards Island, 1998. The purple loosestrife plants have appeared here since 1997.

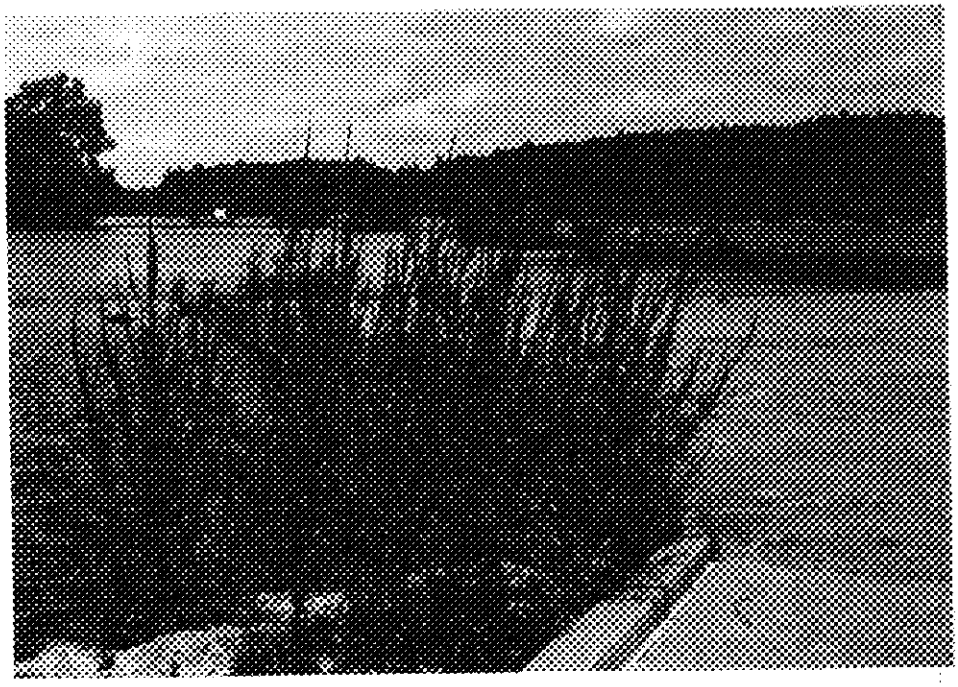

Fig. 14. A large clump of purple loosestrife on the divide between the hydro-electric dam at Port Edwards and the crib, 1998.

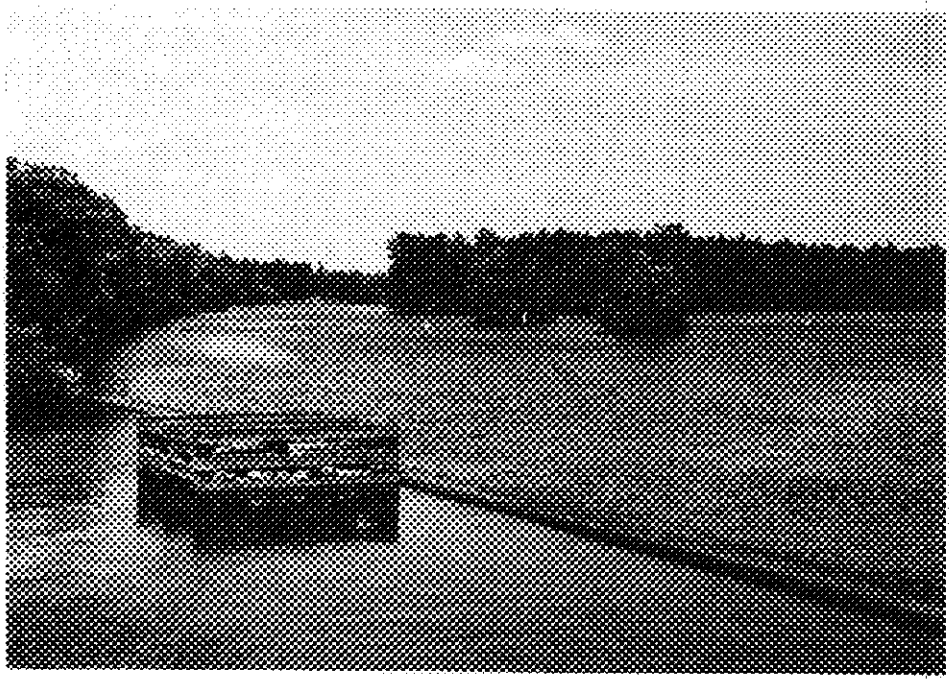

Fig. 15. The west bank of the Wisconsin River from the Centralia Dam, 1997. No purple loosestrife.

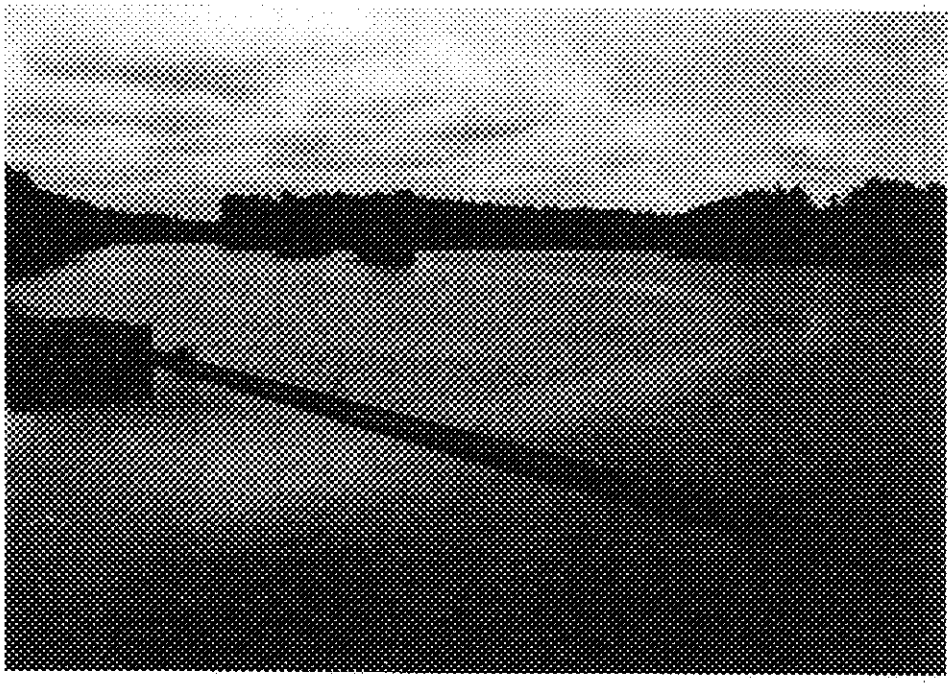

Fig. 16. The west bank of the Wisconsin River from the Centralia Dam, 1998. No purple loosestrife.

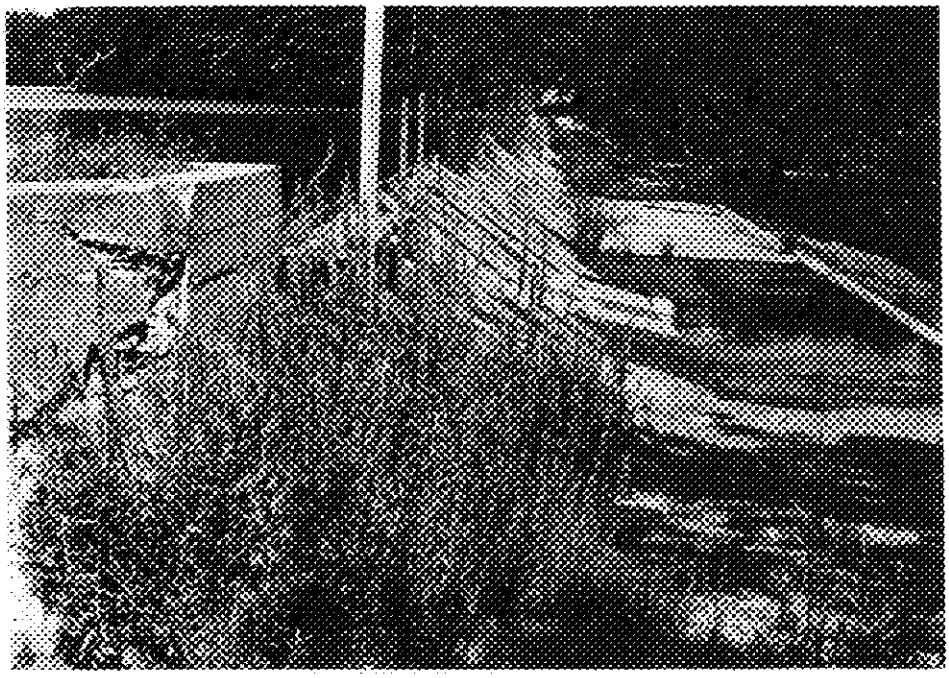

Fig. 17. Looking east across the Centralia Dam, 1997. Abundant purple loosestrife.

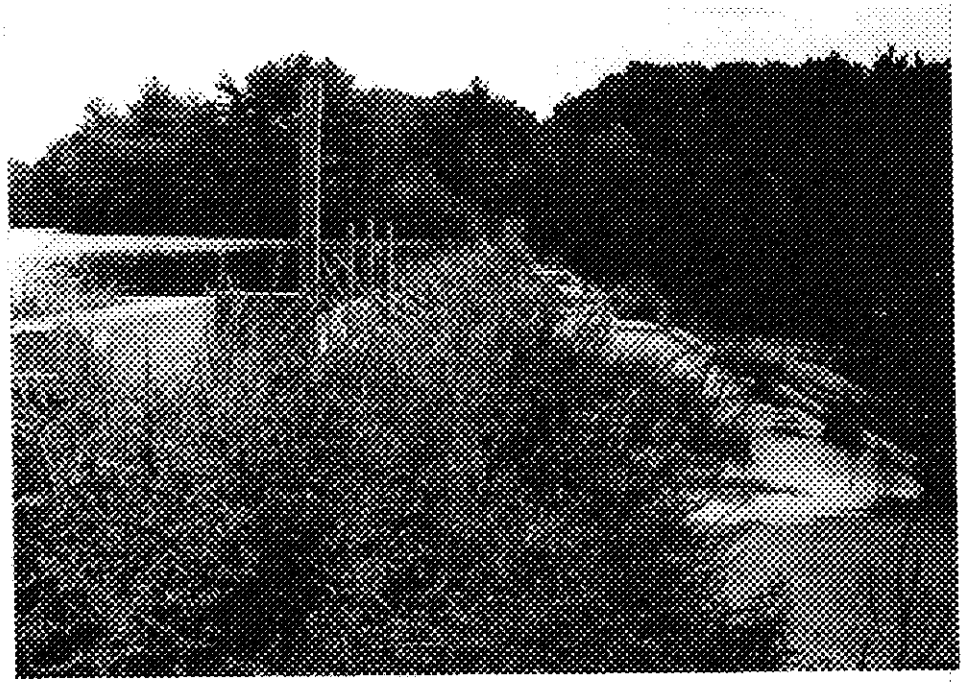

Fig. 18. Looking east across the Centralia Dam, 1998. Purple loosestrife less abdundant on the dam.

Fig. 19. Bicycle and hiking path, 1997. No purple loosestrife.

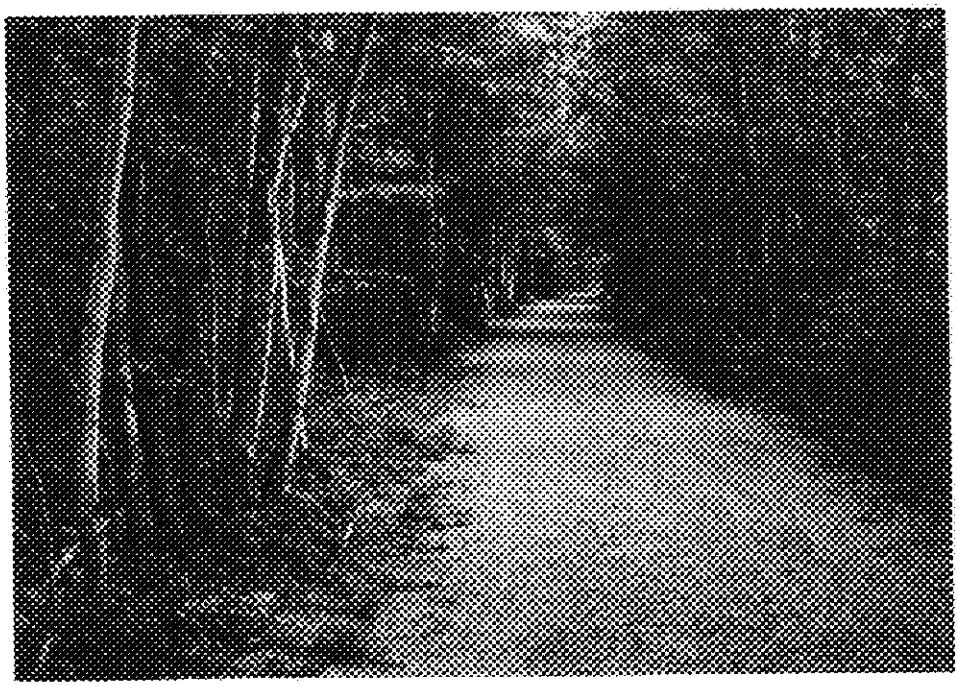

Fig. 20. Bicycle and hiking path, 1998. No purple loosestrife.

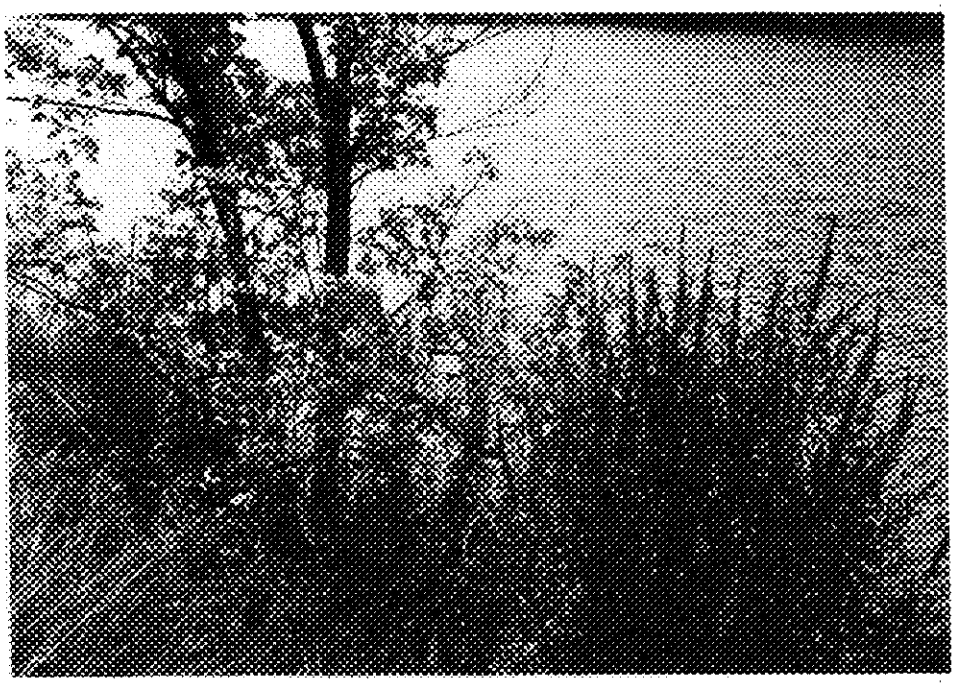

Fig. 21. Purple loosestrife on west bank of the Wisconsin River in Port Edwards near the point where highways 54 and 73 turn west away from the River, 1997.

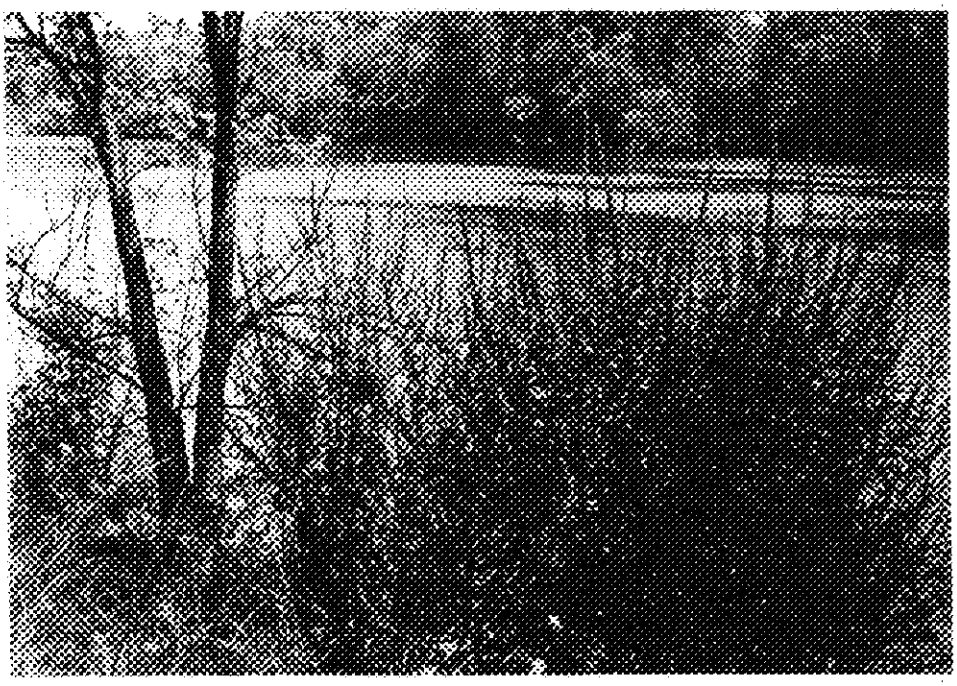

Fig. 22. The same population of purple loosestrife in 1998, showing moderate growth.

Fig, 23. Abundant purple loosestrife on the west bank of the Wisconsin River 100 yards north of the highway 173 bridge in Nekoosa, 1997

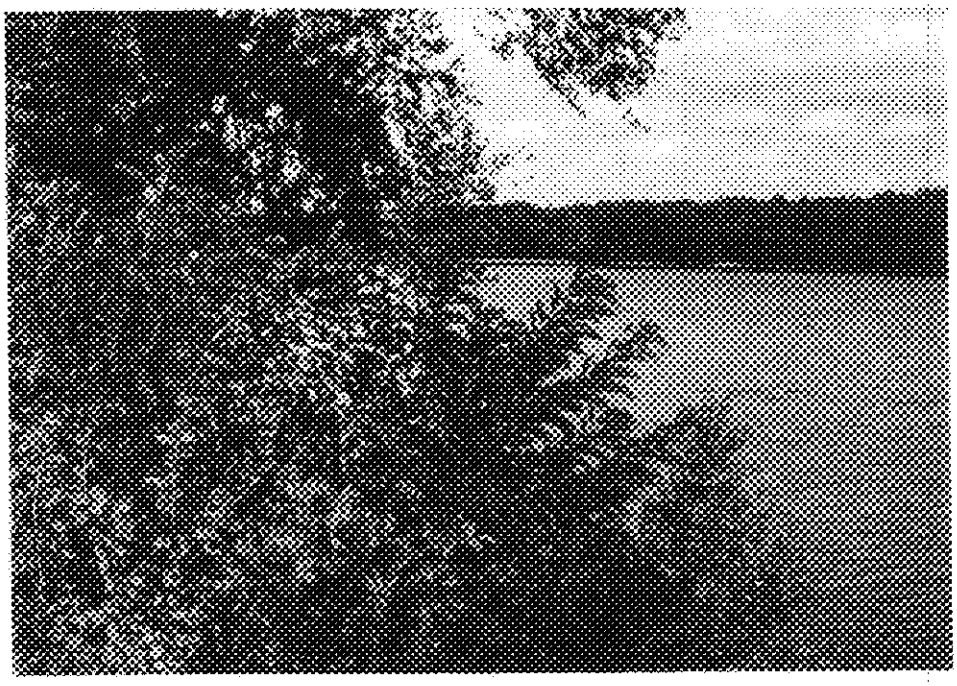

Fig. 24. The same area as fig. 23, in 1998. The purple loosestrife has almost vanished , probably as a result of the growth of black locust and sumac.