

Invasive Species Control Methods

Upper Peninsula Power Company
(UPPCO)

Environmental Services Department

Jamie Nuthals



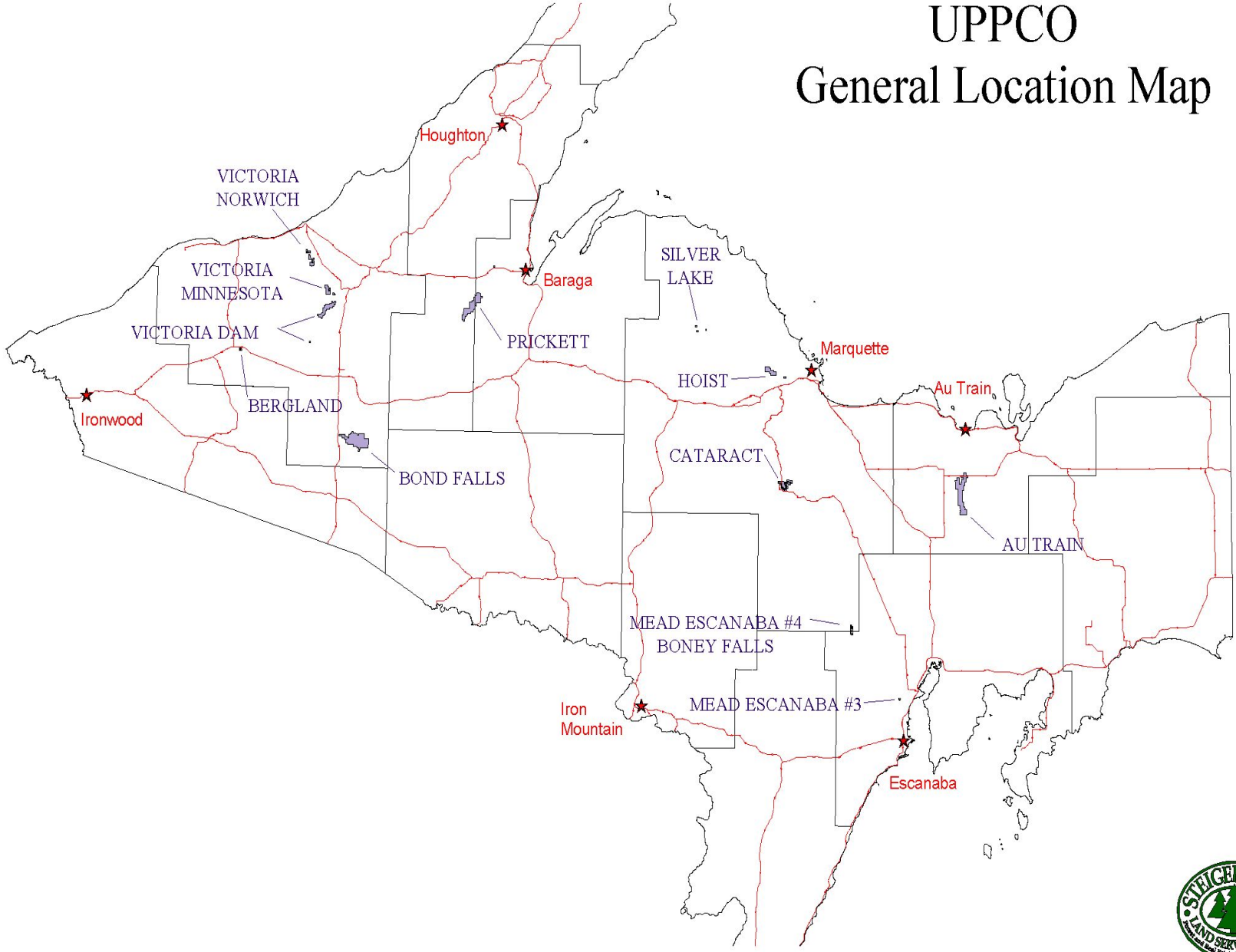


Invasive Species Currently Being Monitored

- Eurasian Water Milfoil (EWM)
- Purple Loosestrife (PL)
- Garlic Mustard (Volunteer Effort)
- UPPCO has six hydroelectric projects in the Upper Peninsula of Michigan that are currently being monitored. (Two FERC plan approved projects have been added in 2005)



UPPCO General Location Map



January 2000 -- Revised February 2000



856 N. Fourth St.
Tomahawk, WI 54487
(715) 453-3274

Eurasian Water Milfoil

- 4 out of the 6 hydroelectric projects have been surveyed for EWM per the FERC license.
- Surveys indicate that EWM is only present at one hydroelectric project.
- The Prickett Hydroelectric Project has a stable population of EWM.





Eurasian Water Milfoil Survey

- Select sampling transects within the hydroelectric project. GPS coordinates are collected at each transect.
- Transects are between 36 to 40 feet in length, with sample collection at 12 foot intervals.
- 4 samples are collected at each interval.





Eurasian Water Milfoil Survey

(continued)

- Samples are collected at 0-0.5 feet, 0.5-1.5 feet, 1.5-3.0 feet and greater 3.0 feet below water surface.
- A number scale is used to indicate the relative abundance or lack of EWM at each sampling location.
- EWM surveys are conducted on a tri-annual basis for most of UPPCO hydroelectric projects.





Eurasian Water Milfoil Results

- UPPCO has not currently controlled EWM from its hydroelectric projects.
- UPPCO will cooperate with the regulatory agencies to control EWM on its hydroelectric projects when appropriate.
- Problem with control; several years to remove and EWM will easily re-establish.





Eurasian Water Milfoil Results

(continued)

- UPPCO uses signs for public awareness.
- Will be conducting a EWM survey at Prickett this summer, to see if 2004 drawdown has reduced EWM population.



Unique Eurasian Water Milfoil Monitoring Program

- EWM on the Cisco Chain of Lakes is monitored and controlled by a Lake Association.
- Have controlled EWM in the past using the herbicide 2,4D.
- Only one lake on the chain has detected a EWM population. Controlled every several years.



AREA CONTAINING EURASIAN WATER MILFOIL





Purple Loosestrife

- Success on two separate UPPCO hydroelectric projects with removing small colonies by hand during annual surveys.
- In all of the cases, purple loosestrife was not identified the following year.





Purple Loosestrife Monitoring and Control

- Conduct Purple Loosestrife (PL) surveys on an annual basis every July or August.
- A PL survey is conducted on the hydroelectric projects shoreline and adjacent wetlands within the FERC boundaries.
- If a colony is located, the stems are cut and sprayed with an emergent aquatic weed herbicide.
- PL has not become established on any of UPPCO's hydroelectric projects.



Purple Loosestrife Biological Control

- Galerucella beetles have been raised by WPSR in the past for non-hydro projects.
- The beetles have been successful in reducing or eliminating PL colonies.









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Garlic Mustard (*Alliaria petiolata*)

- Non-native plant species discovered in Long Island, New York in the 1860's.
- Has spread as far south as Virginia and as far west as Kansas.
- Two known control methods; hand pulling the plants before they set seed and control burning.







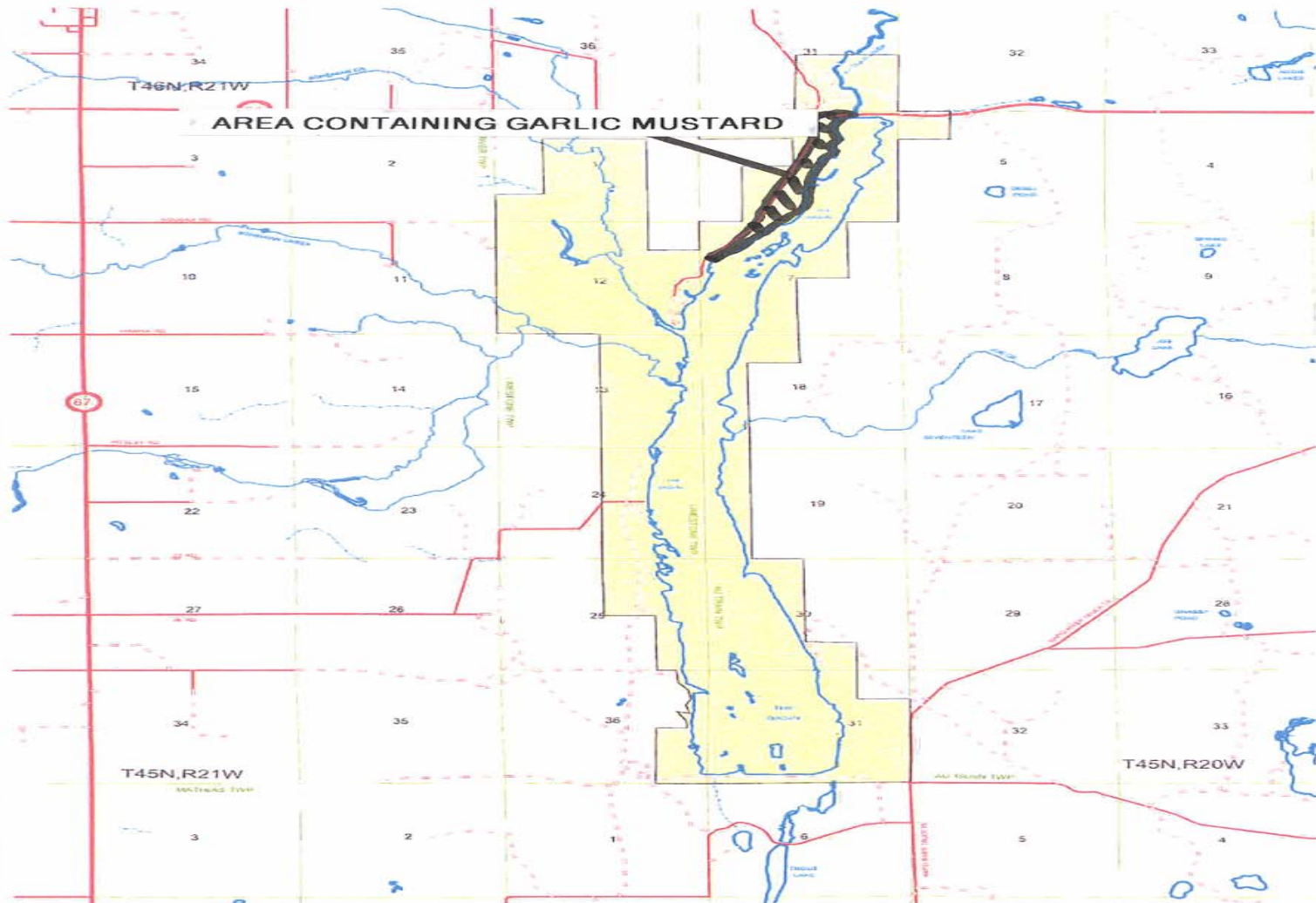


Garlic Mustard Removal Activities

- Garlic mustard was found on project lands within the AuTrain hydroelectric project in spring of 2004.
- UPPCO in collaboration with Northern Michigan University (NMU) and the Nature Conservancy were able to determine the boundaries of the garlic mustard communities.
- UPPCO, NMU, and the Nature Conservancy will be conducting a volunteer effort to remove the garlic mustard this June.
- The process is anticipated to take five years.



Au Train Property Alger Co., MI Preliminary Property Map




GIS Acres	
Land	2,703
Water	1,511
Total	4,214



January 2000 -- Revised February 2000







Invasive Species Control Successes

- Purple Loosestrife has been eliminated at all six of UPPCO's hydroelectric projects.
- A program is in place to eliminate garlic mustard at the Autrain hydroelectric project.
- Eurasian Water Milfoil at the Prickett hydroelectric project is being monitored to determine if the drawdown reduced current populations.



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Questions?

