We Energies
Hydro Operations
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WAY.II.C.2.63
HEM.II.C.2.59
LPT.II.C.2.57
PEA.II.C.2.45
MCH.II.C.2.58
BRL.II.C.1.47
TWF.II.C.2.59
PIN.II.C.4.48
KFH.II.C.2.58
NEQ.II.C.2.57
CHP.II.C.1.48
WHR.II.C.1.48

November 18, 2021 Electronically Filed

Ms. Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street NE
Washington, DC 20426

Dear Ms. Bose:

SUBJECT: 2021 Reports on Nuisance Plant Surveys

Hydro	FERC Project No.	NATDAM No.	License Article
Way/Michigamme Reservoir	**1759**	**MI00205**	**413**
Hemlock Falls	**2074**	**MI00172**	**412**
Lower Paint	**2072**	**MI00179**	**411**
Peavy Falls	**11830**	**MI00191**	**411**
Michigamme Falls	**2073**	**MI00156**	**412**
Brule	**2431**	**MI00184**	**410**
Twin Falls	**11831**	**MI00143**	**412**
Pine	**2486**	**WI00738**	**413**
Kingsford	**2131**	**MI00177**	**412**
Big Quinnesec Falls	**1980**	**MI00103**	**412**
Chalk Hill	**2394**	**MI00160**	**410**
White Rapids	**2357**	**MI00207**	**410**

The "Terrestrial Based Natural Resources Management Plan," filed in September of 1999 as part of the Wilderness Shores Settlement Agreement, which affects Way Dam (FERC No. 1759), Hemlock Falls (FERC No. 2074), Peavy Falls (FERC No. 11830), Michigamme Falls (FERC No. 2073), Lower Paint (FERC No. 2072), Twin Falls (FERC No. 11831), Kingsford (FERC No. 2131), and Big Quinnesec Falls (FERC No. 1980), and the "Order Modifying and Approving Purple Loosestrife and Eurasian Water Milfoil Monitoring Plan" issued on April 30, 1996, for the Pine (FERC No. 2486), August 14, 1997, for the Brule (FERC No. 2431), December 11, 1997, for the Chalk Hill (FERC No. 2394) and White Rapids (FERC No. 2357) projects, require We Energies to provide the final reports on the required annual and biennial monitoring for those projects no later than 30 days after the monitoring is completed. An annual extension for submitting these reports by the end of November was granted in 2010. Monitoring is scheduled each year for a portion of these twelve projects, with the field portion of the monitoring to be completed by August 25.

Report of 2021 Nuisance Plant Monitoring

Please find attached a report of Purple Loosestrife (PL) monitoring activities completed in 2021 consistent with the proposed plan submitted January 22, 2014 and Table 1. The results were presented

by Mike Grisar of our environmental staff at our Annual Land Management Meeting held on October 14, 2021, with representatives from the Wisconsin and Michigan DNRs and the River Alliance of Wisconsin.

The information was made available to everyone in attendance upon request.

Table 1: Comparison of 2021 PL Data Collected vs Proposed Plan Requirements

	Proposed New Plan	
	2021	2021
	Plan	Actual
Way Dam	X	X
Hemlock Falls	X	X
Peavy Falls	X	X
Lower Paint		
Michigamme Falls	X	X
Brule		X*
Twin Falls		
Pine	X	X
Kingsford		
Big Quinnesec Falls		
Chalk Hill	X	X
White Rapids	X	X

* 2021 survey was conducted at Brule due to the presence of purple loosestrife in 2018.

Please call me at (906) 779-4099 if you have any questions concerning this filing.

Sincerely,

Todd P. Jastremski
Asset Manager Hydro Operations

MLG/kng

Enc. Nuisance Plant Survey Report (23 pages)

cc: John Zygaj, FERC – CRO
Cheryl Laatsch – WDNR
Elle Gulotty – MDNR
Darin Simpkins – FWS
James Fossum – RAW
Bob Stuber – MHRC

We Energies
2021 Annual Report - Nuisance Plant Control Survey
White Rapids Reservoir
FERC Project #2357

Background and Methods

We Energies Environmental Department staff, Mr. Mike Grisar and Mr. Scott Horzen, conducted a survey from a boat of the entire shoreline at the White Rapids project on August 11, 2021. All waters and appropriate wetlands accessible from the boat were evaluated for the presence of purple loosestrife (*Lythrum salicaria*).

If any occurrences of purple loosestrife were observed, they were mapped using a Trimble XH GPS unit. Each location was identified as a stand and the number of plants, stems per plant, and relative age of the plants were recorded. Any plants observed were removed by hand including flowers, stems, and roots.

Results and Discussion

In 2010, purple loosestrife was observed for the first time on the White Rapids reservoir. It was a relatively small population of six plants found on the west point along the south side of the channel bisecting the large island in the middle of the reservoir. This population returned each of the next two years in 2011 and 2012, and all plants were removed. While the entire reservoir was monitored in subsequent years for the presence of purple loosestrife, particular attention was given to the location where purple loosestrife was observed between 2010 through 2012. No purple loosestrife has been observed at White Rapids since 2012, including in 2021.

Conclusions

By removing the plants found between 2010-2012, the stand was effectively managed and absent between 2013 through 2021. Manually removing individual plants that were encountered during previous years was effective in eliminating the stand.

An influx of purple loosestrife occurring along public roadways leading to several of the reservoirs was first reported in 2010. Since, purple loosestrife infestations were documented to be increasing exponentially along CTH K leading easterly toward the Menominee River between the Chalk Hills and White Rapids project areas. These populations have periodically been managed, although have not been eliminated. Continued management by other parties is necessary to reduce the potential for purple loosestrife to spread in the Menominee River system.

We Energies
2021 Annual Report - Nuisance Plant Control Survey
Chalk Hill Reservoir
FERC Project #2394

Background and Methods

We Energies Environmental Department staff, Mr. Mike Grisar and Mr. Scott Horzen, conducted a survey from a boat of the entire shoreline at the Chalk Hill project on August 11, 2021. All waters and appropriate wetlands accessible from the boat were evaluated for the presence of purple loosestrife (*Lythrum salicaria*).

If any occurrences of purple loosestrife were observed, they were mapped using a Trimble XH GPS unit. Each location was identified as a stand and the number of plants, stems per plant, and relative age of the plants were recorded. Any plants observed were removed by hand including flowers, stems, and roots.

Results and Discussion

Prior to 2010, a very small population of purple loosestrife had been observed and managed for at the south end of Miscauno Island. In 2010, a single plant was located in the back of a secluded bay along the west side immediately adjacent to a wood duck house that was installed by a third party. Previously observed plants were removed including the flowering heads, stems, and root mass, and the plants were effectively managed.

While the entire reservoir has been monitored for the presence of purple loosestrife, particular attention has been given to the locations where it had been previously observed. A single plant was observed at a new location in 2017, and two plants were observed in the same vicinity in 2018. The location occurred approximately 0.4-mile south of the CTH Z bridge on the west bank of the river. The entire plants were removed. The area was monitored for the presence of purple loosestrife in 2019 through 2021, and no purple loosestrife was observed. A new location with one plant was observed in 2020 on a small island approximately 1-mile upstream of Miscauno Island (see attached map). The plant was removed and disposed of appropriately. No plants were observed in 2021.

Conclusions

New locations of purple loosestrife have occasionally been observed in Chalk Hill since monitoring began in the late 1990's. By removing previously observed plants, the population encroachment has been effectively managed early in its infestation within the project boundary. Continued active removal of observed purple loosestrife will continue to prevent the infestation from spreading further within Chalk Hill.

An influx of purple loosestrife occurring along public roadways leading to several of the reservoirs was first reported in 2010. Since, purple loosestrife infestations were documented to be increasing exponentially along CTH K leading easterly toward the Menominee River between the Chalk Hill and White Rapids project areas. These populations have periodically been managed, although have not been eliminated. Continued management by other parties is necessary to reduce the potential for purple loosestrife to spread in the Menominee River system.

We Energies
2021 Annual Report - Nuisance Plant Control Survey
Pine Reservoir
FERC Project #2486

Background and Methods

We Energies Environmental Department staff, Mr. Mike Grisar and Mr. Scott Horzen, conducted a survey from a boat of the entire shoreline at the Pine project on July 23, 2021. All waters and appropriate wetlands accessible from the boat were evaluated for the presence of purple loosestrife (*Lythrum salicaria*).

If any occurrences of purple loosestrife were observed, they were mapped using a Trimble XH GPS unit. Each location was identified as a stand and the number of plants, stems per plant, and relative age of the plants were recorded. Any plants observed were removed by hand including flowers, stems, and roots.

Results and Discussion

No purple loosestrife plants were observed along the shores of the Pine Reservoir project area.

Conclusions

Purple loosestrife has yet to be observed at the Pine project area since the nuisance plant surveys began. Diligent monitoring will continue to prevent an invasion of this species.

We Energies
2021 Annual Report - Nuisance Plant Control Survey
Brule Reservoir
FERC Project #2431

Background and Methods

We Energies Environmental Department staff, Mr. Mike Grisar and Mr. Scott Horzen, conducted a survey from a boat of the entire shoreline at the Brule Reservoir project on August 13, 2021. All waters and appropriate wetlands accessible from the boat were evaluated for the presence of purple loosestrife (*Lythrum salicaria*).

If any occurrences of purple loosestrife were observed, they were mapped using a Trimble XH GPS unit. Each location was identified as a stand and the number of plants, stems per plant, and relative age of the plants were recorded. Any plants observed were removed by hand including flowers, stems, and roots.

Results & Discussion

In 2009, a single plant was observed in the eastern bay east of the confluence of the Paint and Brule Rivers. The entire plant was removed and management of this encroaching stand appeared to be completely successful. No new plants were observed there, or anywhere else at Brule, from 2009 through 2017.

In 2018, a single plant was observed in very close proximity to the location of where the plant was removed in 2009. This plant was removed entirely. No new plants were observed in 2021.

Conclusions

Purple loosestrife was first observed in the Brule Reservoir in 2009, and again in 2018. The removal of the plant observed in 2009 was successful with no reoccurrence of this stand through 2018. The 2018 removal appeared successful with no reoccurrences observed in 2019 through 2021. Continued active removal of observed purple loosestrife will continue to prevent the infestation from spreading further within Brule Reservoir.

We Energies
2021 Annual Report - Nuisance Plant Control Survey
Michigamme Falls Reservoir
FERC Project #2073

Background and Methods

We Energies Environmental Department staff, Mr. Mike Grisar and Mr. Scott Horzen, conducted a survey from a boat of the entire shoreline at the Michigamme Falls project on August 12, 2021. All waters and appropriate wetlands accessible from the boat were evaluated for the presence of purple loosestrife (*Lythrum salicaria*).

If any occurrences of purple loosestrife were observed, they were mapped using a Trimble XH GPS unit. Each location was identified as a stand and the number of plants, stems per plant, and relative age of the plants were recorded. Any plants observed were removed by hand including flowers, stems, and roots.

Results and Discussion

No purple loosestrife plants were observed along the shores of the Michigamme Falls Reservoir project area.

Conclusions

Purple loosestrife has yet to be observed at the Michigamme Falls project area since the nuisance plant surveys began. Diligent monitoring will continue to prevent an invasion of this species.

We Energies
2021 Annual Report - Nuisance Plant Control Survey
Peavy Falls Reservoir
FERC Project #11830

Background and Methods

We Energies Environmental Department staff, Mr. Mike Grisar and Mr. Scott Horzen, conducted a survey from a boat of the entire shoreline at the Peavy Falls project on July 22, 2021. All waters and appropriate wetlands accessible from the boat were evaluated for the presence of purple loosestrife (*Lythrum salicaria*).

If any occurrences of purple loosestrife were observed, they were mapped using a Trimble XH GPS unit. Each location was identified as a stand and the number of plants, stems per plant, and relative age of the plants were recorded. Any plants observed were removed by hand including flowers, stems, and roots.

Results and Discussion

In 2013, one purple loosestrife stand was observed along the Peavy Falls shorelines. This was the first time purple loosestrife was encountered at this project site, and it was observed within a few feet of the west side of the boat launch at Recreation Area #10. The entire plant, including roots, stems, and flowers were removed. Purple loosestrife has not been observed since, including in 2021.

Conclusions

No purple loosestrife plants have been observed at the Peavy Falls project area since 2013, and the manual removal was successful. Diligent monitoring will continue to prevent further invasion of this species.

We Energies
2021 Annual Report - Nuisance Plant Control Survey
Hemlock Falls
Project #2074-007

Background and Methods

We Energies Environmental Department staff, Mr. Mike Grisar and Mr. Scott Horzen, conducted a survey from a boat of the entire shoreline at the Hemlock Falls project on August 12, 2021. All waters and appropriate wetlands accessible from the boat were evaluated for the presence of purple loosestrife (*Lythrum salicaria*).

If any occurrences of purple loosestrife were observed, they were mapped using a Trimble XH GPS unit. Each location was identified as a stand and the number of plants, stems per plant, and relative age of the plants were recorded. Any plants observed were removed by hand including flowers, stems, and roots.

Results and Discussion

No purple loosestrife plants were observed along the shores of the Hemlock Falls Reservoir project area.

Conclusions

Purple loosestrife has yet to be observed at the Hemlock Falls project area since the nuisance plant surveys began. Diligent monitoring will continue to prevent an invasion of this species.

We Energies
2021 Annual Report - Nuisance Plant Control Survey
Way Dam & Michigamme Reservoir
FERC Project #1759

We Energies Environmental department staff, Mr. Mike Grisar, Mr. Mike Al-wathiqui, Mr. Scott Horzen, and Mr. Tyson Schreiner conducted two separate surveys from a boat at the Way Dam and Michigamme Reservoir project on July 20 & 21, and August 8 & 10, 2021. All waters and appropriate wetlands accessible from the boat were evaluated for the presence of purple loosestrife (*Lythrum salicaria*).

Additionally, We Energies surveyed the Michigamme River from the Highway 95 (M-95) bridge north of Channing, MI downstream to Newberg Road at the Way Dam project boundary. These surveys occurred on July 19 and August 9, 2021. This is an approximate 5-mile stretch of the river that We Energies committed to surveying during the annual agency meeting in fall 2008. The effort was done to determine the extent of purple loosestrife immediately upstream of the Way Dam project, and to attempt to minimize the potential for a prolific invasion within the project limits and further down through the Menominee system.

If any occurrences of purple loosestrife were observed, they were mapped using a Trimble XH GPS unit. Each location was identified as a stand and the number of plants, stems per plant, and relative age of the plants were recorded. Any plants observed were removed by hand including flowers, stems, and roots.

<u>Way Dam and Michigamme Reservoir Project Area</u>

Purple loosestrife has been observed in the Michigamme Reservoir each year since 2006. Several years prior to 2006, it had been documented at a single location and as a single plant. Each year, every plant found has been removed. From 2006 through 2010 a rapid invasion occurred resulting in significant increases in the number of locations (i.e. stands), total plants, and total stems observed. Plants were found primarily in the east portions of the reservoir and upstream of where the Michigamme River outlets into the main reservoir basin. In 2010, it was the first time purple loosestrife had been observed beyond the mouth of the river and in the main basin, which was in two locations.

Dramatic declines in the number of locations, plants, and total stems were observed in 2011. However, the population spiked in 2012 when the highest recorded levels in the total number of plants and stems were observed. As a result of the 2012 spike, it was decided to conduct two separate surveys for purple loosestrife in an attempt to better locate plants that were developing later in the season and reduce the potential to find multi-year plants the following year. This also would reduce seed production and dispersal by plants not detected during the first survey. It has been noted that the flowering period for purple loosestrife in Way Dam has been variable. By conducting the two surveys each year from 2013 through 2021, it is evident that there is not a distinct peak flowering period, but rather the flowering of individual plants is spread out between mid-July and the end of August.

From the beginning of the recorded surveys in 2006, the total number of stands observed in a single year peaked in 2021 at 176 observed stands. There are four areas, or clusters, with stands in close proximity to one another and with larger numbers of individual plants collectively within these clusters. Two of these areas occur to the south and southeast of Weber Lake, one occurs near Lake Ellen (which is outside the project boundary and to the west of Recreation Site 29), and one occurs on the right shoreline near where the Michigamme River stretch opens into

the main reservoir basin. Collectively, these clusters accounted for 48 of the stands observed in 2021. The number of plants observed within these clusters included 846 individuals. There was one individual stand that accounted for an additional 12 plants. Without these large clusters and stands, the number of total stands observed at Way Dam would have been at 127 stands and 189 plants. The large clusters accounted for 82% of all plants observed in 2021. These cluster areas were thoroughly surveyed and all plants were removed. Population reductions are anticipated in these large clusters and stands as has been observed previously due to the effective management conducted.

New high values for the total number of plants, stems, and multi-year plants were documented in 2019. These are entirely attributed to a single location where a very large population was observed, which was recorded as six stands (606-611). This population was found to occur in an area that was dominated by cattail along the shoreline. A pocket of cattails did not grow in 2019 presenting much better visibility to the shoreline at this location. The improved visibility allowed the field biologists to observe and manage the population in 2019. This one population accounted for 87% of the total plants, 91% of the total stems, and 83% of the total multi-year plants recorded in 2019. From a management standpoint, the level of effort to remove purple loosestrife plants at this location reduced to only about one-fifth the effort in 2021 when compared to when the population was first encountered.

Another analysis conducted is reviewing the annual data results of only the July survey. This is due to prior to 2013, only one survey was completed at Way Dam at the end of July each year. Analyzing only the July survey data allows for a direct annual comparison throughout the sixteen-year monitoring period. Through this analysis, the data show the total number of stands, plants, stems, and multi-year plants are slightly increasing. This is attributed to the aforementioned larger clusters. When excluding those clusters from the data analysis, the purple loosestrife population is generally stable over the past several years.

Since the 2013 survey year when two annual surveys began, the data strongly supports the effort to conduct two surveys annually. The results indicate that approximately two to three times more plants and stems have been removed from the reservoir annually by conducting the second survey in August. In doing so, the reproduction potential of purple loosestrife within the reservoir has been substantially decreased.

One additional measure to determine management effectiveness is how many of the locations where purple loosestrife is found in a given year are locations where it was found in any previous year. Purple loosestrife has been found at 770 total locations in the past 16 years. Of these, only 107 (approximately 14%) stands documented between 2006 and 2020 were at locations where the purple loosestrife returned in 2021. Of these 107 locations, two-thirds of them were observed in very close proximity to previously identified stands. Less than 5% of the total observed stands were in locations purple loosestrife was not previously found. This has been a consistent trend since 2010 and a strong indication the management techniques used is minimizing the dispersal of purple loosestrife.

While a majority of the stand locations are centralized around the Weber Lake area and upstream, purple loosestrife occurrences expanded further downstream in 2012 into the main reservoir. This was beyond where it had been previously documented prior to 2010. Up until 2010, the furthest downstream observations occurred about ½-mile upstream of where the Michigamme River enters the main reservoir basin. By 2012, purple loosestrife had been observed throughout much of the main reservoir basin; however, it was widely distributed and in relatively few locations. In 2013, many of the stands documented to have spread through the main basin between 2010 through 2012 were no longer present. Through 2020, purple loosestrife has been observed at 20 locations in the main basin. While four new stands were

observed in 2021 within the main basin, each occurred in very close proximity to previously identified stands. The number of total stands and plants observed within the main basin in 2021 was substantially reduced from previous years' observations indicating purple loosestrife management upstream is reducing the dispersal into the main basin.

When considering all factors including the long-term trends in reduced plants and stems, the relatively small proportion of the total stands reoccurring from one year to the next, and the reduction of observed plants in the main reservoir basin, the management technique of manual removal of all plant material has been successful. While it is very labor intensive to conduct these manual removals, it is successful at least at those locations where the loosestrife can be observed.

Two primary objectives will continue to drive the management plan for controlling purple loosestrife within Way Dam. These include early detection of new infestation locations as well as finding and thoroughly managing the larger stands. By implementing the second survey strategy since 2013, the 2021 results suggest these goals are being achieved. By not conducting the second survey and removing the reproduction potential of these additional plants, the purple loosestrife population would likely have continued to increase exponentially as was being observed between 2006 and 2012.

We Energies plans to continue surveying and managing purple loosestrife at the Way Dam & Michigamme Reservoir project site annually to minimize the potential for mature plants setting and releasing seed into the reservoir.

<u>Michigamme River – Highway 95 to Newberg Road</u>

The purple loosestrife population within the Way Dam project lands is concerning as there is a viable purple loosestrife population occurring upstream of the Way Dam project area. In agreeing to conduct a survey on the Michigamme River further upstream from the project area, the Company has developed a better understanding of the extent to which purple loosestrife occurs upstream of the reservoir system. We Energies has been collaborating with the NRCS Dickinson Conservation District (DCD) office and the Wild Rivers Invasive Species Coalition (WRISC) for over a decade to combat the purple loosestrife infestation on the Michigamme River.

In 2009, surveys commenced along that stretch of the Michigamme River from the north end of the Way Dam project area up to the first road crossing at M-95 near the Dickinson and Marquette County line. Surveys have continued in this river stretch through 2021, and two distinct surveys were conducted each year over that period.

Similar to the population explosion that occurred in Way Dam, a dramatic increase in the purple loosestrife population occurred between 2009 and 2012. Similar to the trends between 2011 and 2012 on Way Dam, the river stretch experienced a substantial decline in the documented population in 2013. Then, a spike in the population on the river stretch occurred again in 2014. Survey results between 2015 and 2017 showed declines in the number of stands, plants, and stems observed from the 2014 peak. Slight increases in these population values were observed in 2018, but the values remained well below the 2014 recorded data. Results between 2019 and 2021 surveys show the population on the river stretch is generally stable. In 2020, the population was observed to have the fewest stands since 2011, the fewest plants since 2010, and the fewest stems since 2009. While there were slight increases in the 2021 number of stands (+4%), plants (+5%), and stems (+16%) observed, the increases were relatively small.

Comparing the July 2014 results to 2013 data as a more direct comparison to the initial survey beginning in 2009, the number of stands, total plants, and stems observed increased substantially over the July 2013 observations. Since, there has been a general trend of a population decline and stabilization. The 2021 July survey results show the loosestrife population values were at some of their lowest values since the initial survey in 2009.

To further improve the management effectiveness, the second survey conducted in each of the past seven years has resulted in a significantly more thorough removal of purple loosestrife from the river stretch surveyed below M-95. The August 2021 survey resulted in the removal of an additional 41% of all the stands, 43% of all the plants, and 45% of all the stems detected in 2021 that would not have been removed from the system without the second survey.

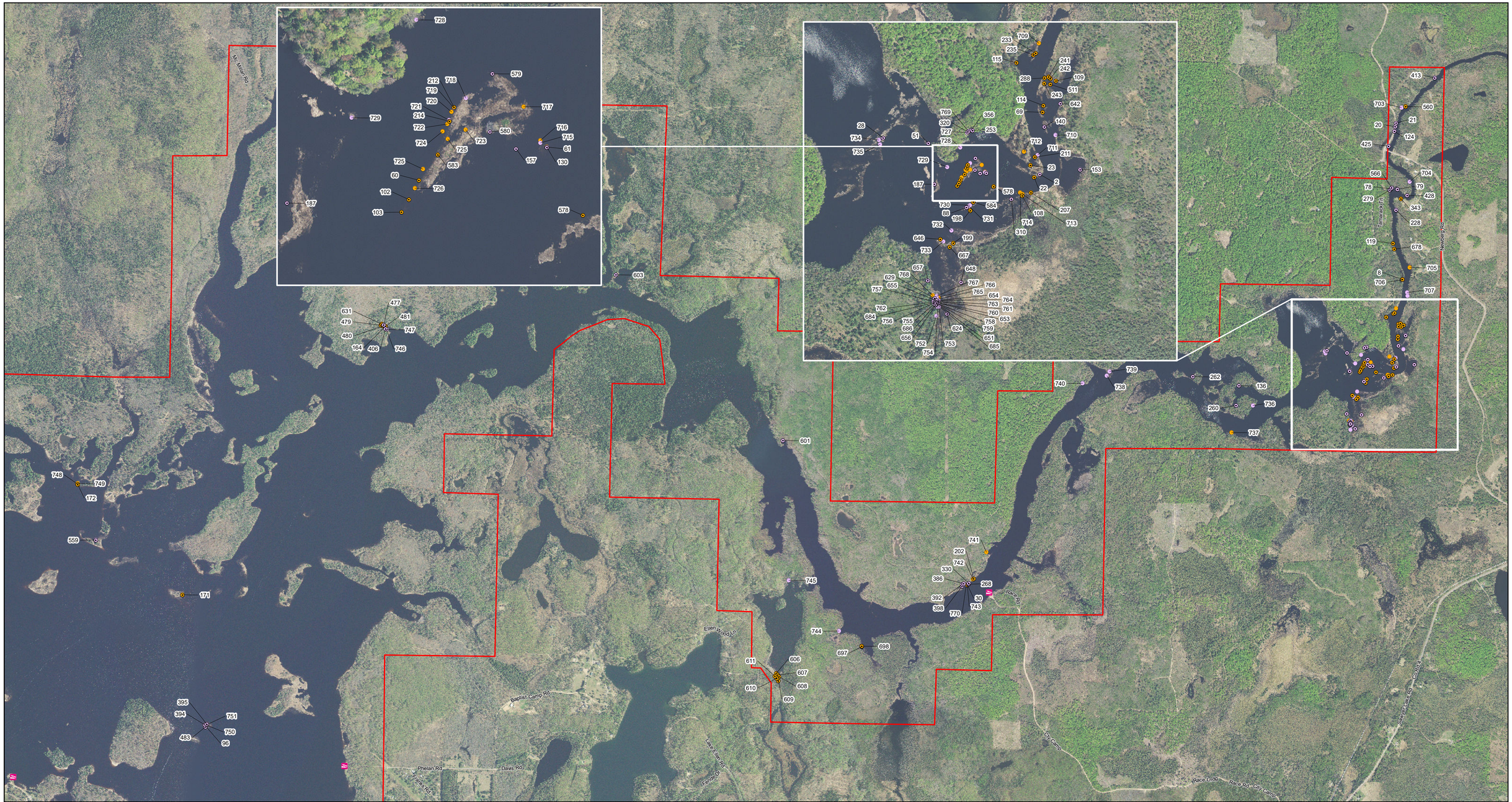
Additionally, purple loosestrife has been found at 1438 total locations in the past 13 years. Of these, 181 (13%) stands documented between 2009 and 2020 were locations where the purple loosestrife returned in 2021.

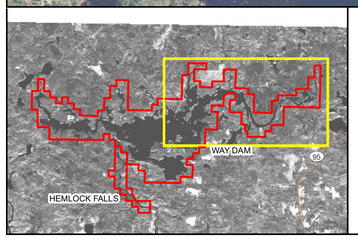
The effort to expand our understanding of source populations upstream of the Way Dam project area expanded in 2010 by further collaboration with Ms. Ann Hruska. Ms. Hruska was awarded a Wilderness Shores Mitigation Enhancement Fund (MEF) grant for conducting purple loosestrife management along the Michigamme River upstream of the Way Dam project area. In preparation for implementing this grant, Ms. Hruska conducted road surveys in August 2010 along access points from the M-95 crossing up to and north of Republic. Ms. Hruska found numerous dense monotypic stands of purple loosestrife along the shores of the Michigamme River in and around the Republic, MI area. Some of these stands were several acres in size. Many other small stands were observed along the Michigamme River banks at road vantage points from the M-95 crossing at the Marquette and Dickinson County line upstream to Republic. It was quite evident the source population(s) for the loosestrife occurring in the Way Dam project area is from the area in and around Republic, MI.

In 2011 and 2012, Ms. Hruska continued the purple loosestrife management efforts upstream of Way Dam by conducting a more detailed survey in the Republic area and on portions of the Michigamme River up and downstream of Republic. She also began implementing a biological control management program for purple loosestrife targeting the most problematic stands documented in the presence/absence surveys she conducted. Further monitoring and biological control measures continued to be implemented in 2013. Results indicated the prior releases of beetles had been effective in reducing the extent and productivity of the source populations upstream of Way Dam. Unfortunately, there was very minimal evidence the released beetles survived the winter of 2013-14. Evidence the beetle populations recovered from the cold winter was observed in 2015. Additional beetles were reared and released with the long-term goal to establish a viable population of beetles that will be able to manage the purple loosestrife population as a self-sustaining biological control agent for the Michigamme River system.

An MEF grant was awarded to the NRCS Dickinson County Conservation District office and the Wild Rivers Invasive Species Coalition in 2019. For this grant, they have partnered with Lake2Lake CISMA, the Marquette County Conservation District, the Western Peninsula Invasives Coalition, and the Iron-Baraga Conservation District to carry out a five-year (2020-2024) project to manage purple loosestrife on the Michigamme River from the source population near Republic down to Way Dam. Their project will incorporate the same methods as has been conducted on the river stretch from M-95 to Way Dam for the past 11 years. This will allow for directly comparable data and trends analysis. With this effort, the trends in reduced purple loosestrife populations occurring on the Michigamme River stretch from M-95 to Way Dam and within Way Dam are expected to continue over the five-year project.

The management activities that have occurred within both the Way Dam project area and the approximate 5-mile stretch of the Michigamme River upstream have had a direct and positive impact on keeping the purple loosestrife infestation within Way Dam in check. We Energies intends to continue collaborating with the NRCS Dickinson County Conservation District office, the Wild Rivers Invasive Species Coalition, and the other partners in further investigating source populations and management for purple loosestrife upstream of the Way Dam project area.





- Purple Loosestrife: Reoccurring Sites July 2021*
- Purple Loosestrife: Reoccurring Sites August 2021*
- Purple Loosestrife: New Sites July 2021
- Purple Loosestrife: New Sites August 2021
- Public Boat Launch
- FERC Hydro Project Boundary

* Reoccurring sites are those that have been mapped in previous years

1,000 500 0 1,000 2,000 Feet

Way Dam Hydro Project - Year 2021
Purple Loosestrife Survey

Source: UMERC Imagery, 2018
GPS field data collected: 7/19/2021; 7/20/2021; 7/21/2021
8/09/2021; 8/10/2021; 8/11/2021;8/13/2021

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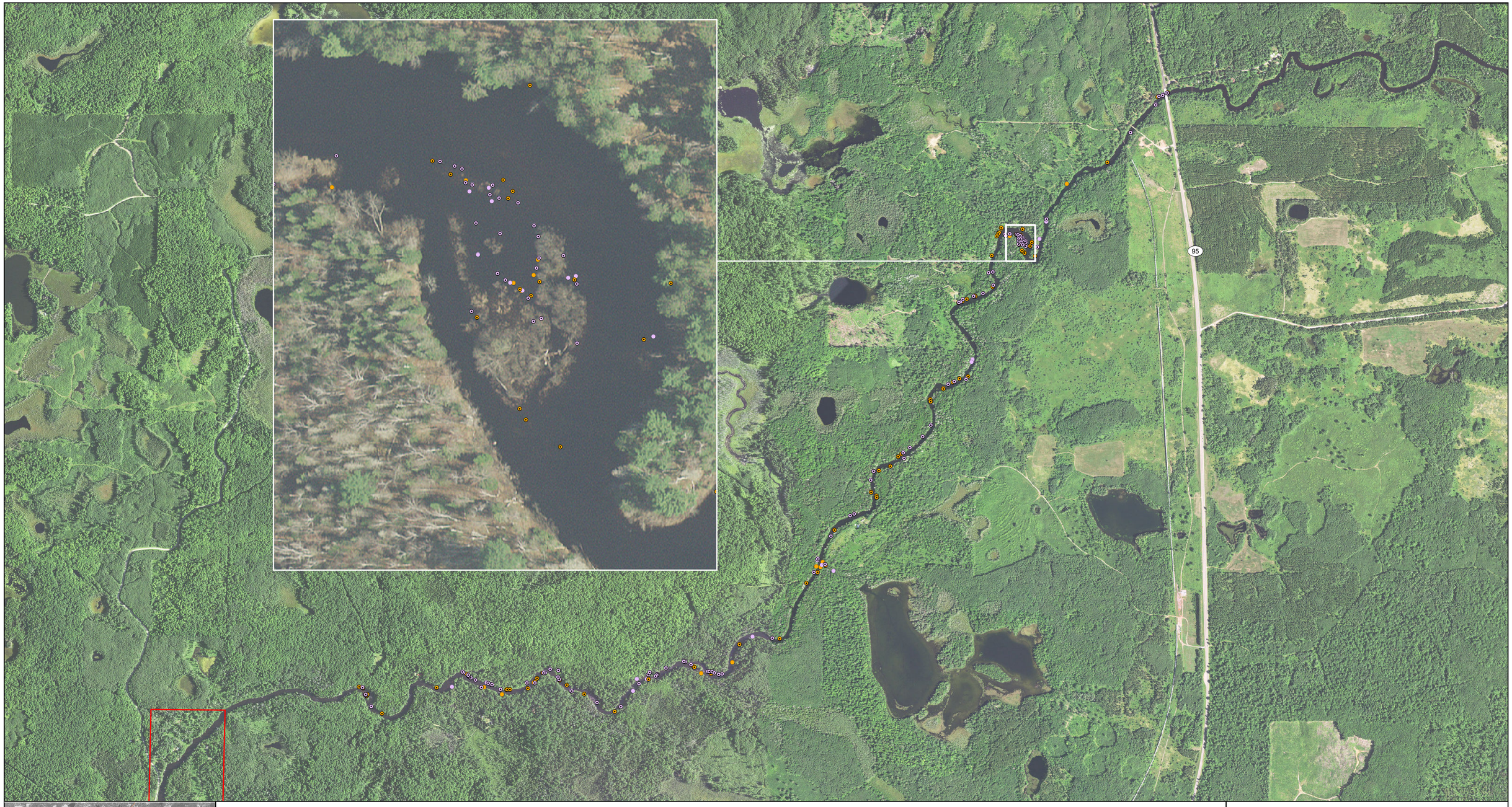

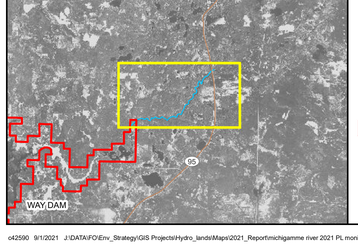

- Purple Loosestrife: Reoccurring Sites July 2021*
- Purple Loosestrife: Reoccurring Sites August 2021*
- Purple Loosestrife: New Sites July 2021
- Purple Loosestrife: New Sites August 2021
- FERC Hydro Project Boundary

* Reoccurring sites are those that have been mapped in previous years

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Michigamme River - Year 2021
Purple Loosestrife Survey

Source: UMERC Imagery, 2018 & NAIP Imagery, 2020
GPS field data collected 7/21/2021 & 8/10/2021

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We Energies Hydroelectric Operations
Way Dam Purple Loosestrife Monitoring Summary (2006-2021)

July Survey Only

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
# of Observed Stands	4	6	30	28	68	53	65	39	39	55	69	50	61	51	70	100
# of Plants Observed	4	9	57	94	558	176	1239	240	275	159	297	130	112	131	208	371
# of Stems Observed	51	128	160	271	1732	397	1863	497	521	338	524	258	225	249	572	832
Stems Observed per Plant	12.75	14.22	2.81	2.88	3.1	2.26	1.50	2.07	1.89	2.13	1.76	1.98	2.01	1.90	2.75	2.24
Multi-year Plants Observations	2	4	9	31	314	110	429	190	254	132	230	101	93	122	199	305

Total (July & August Surveys Combined)

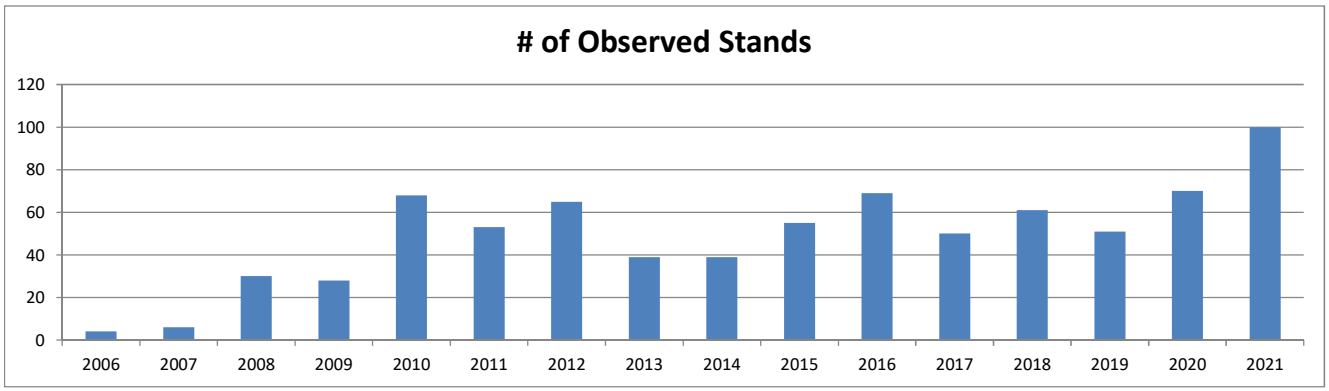
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
# of Observed Stands	4	6	30	28	68	53	65	61	93	106	130	141	123	102	145	176
# of Plants Observed	4	9	57	94	558	176	1239	290	720	347	890	339	224	1536	618	1047
# of Stems Observed	51	128	160	271	1732	397	1863	680	1247	686	1714	588	463	4288	1492	2097
Stems Observed per Plant	12.75	14.22	2.81	2.88	3.1	2.26	1.50	2.34	1.73	1.98	1.93	1.73	2.07	2.79	2.41	2.00
Multi-year Plants Observations	2	4	9	31	314	110	429	233	565	269	756	285	184	1102	541	653

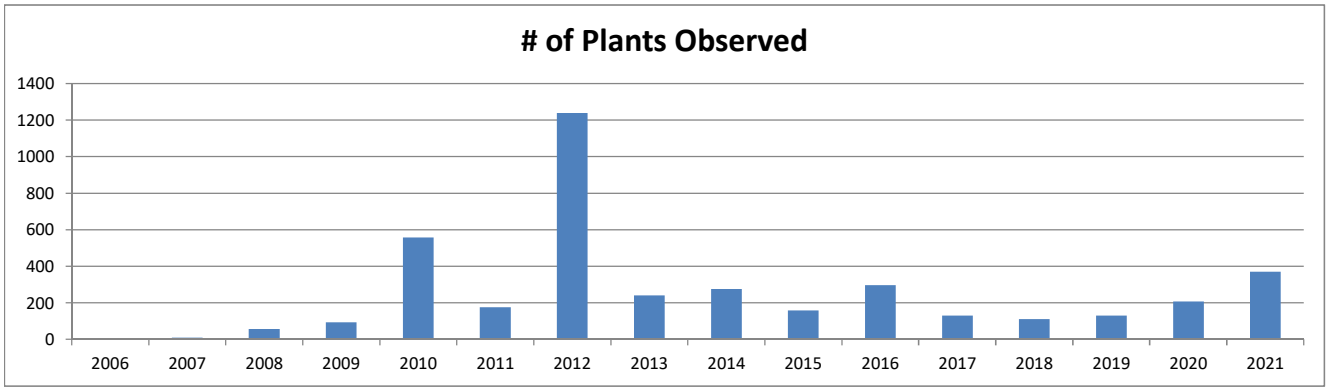
July Survey with Largest Stands Removed

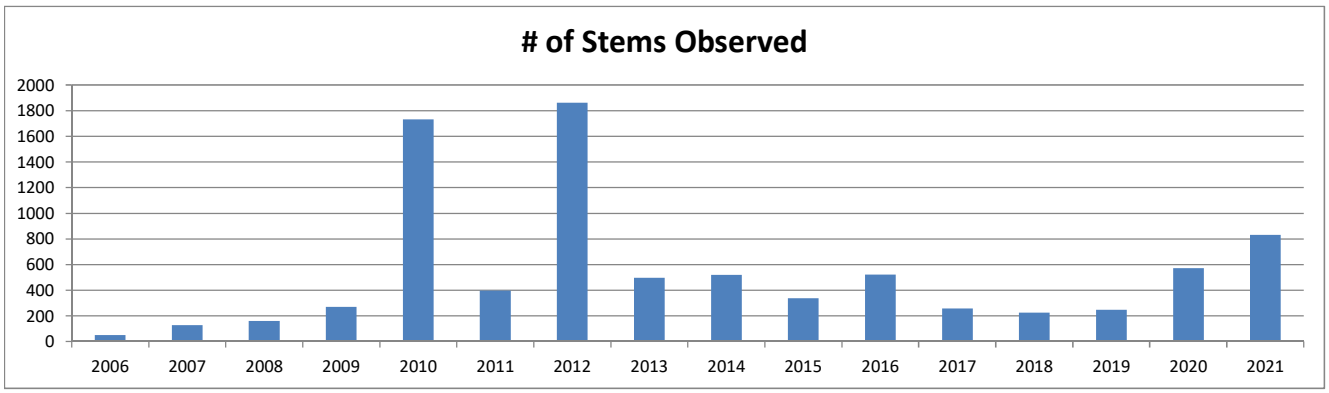
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
# of Observed Stands	4	6	30	28	68	53	61	62	36	52	57	47	60	50	51	70
# of Plants Observed	4	9	57	94	558	176	111	93	86	113	132	71	91	87	81	114
# of Stems Observed	51	128	160	271	1732	397	358	248	247	277	259	185	202	171	202	269
Stems Observed per Plant	12.75	14.22	2.81	2.88	3.10	2.26	1.50	2.67	2.87	2.45	1.96	2.61	2.22	1.97	2.49	2.36
Multi-year Plants Observations	2	4	9	31	314	110	170	88	81	97	107	65	87	82	80	100

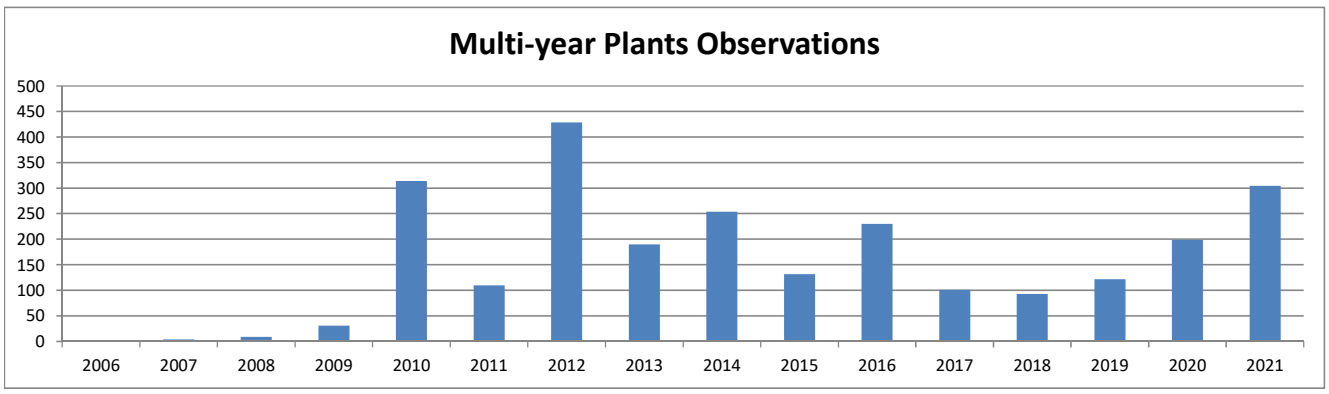
We Energies - Purple Loosestrife Monitoring 2006-2021 on Way Dam Reservoir

July Survey Only



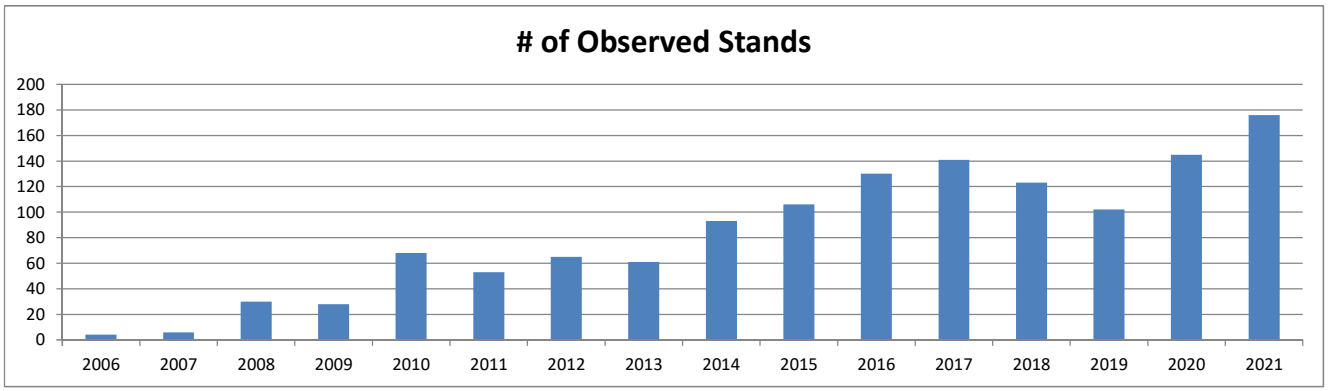


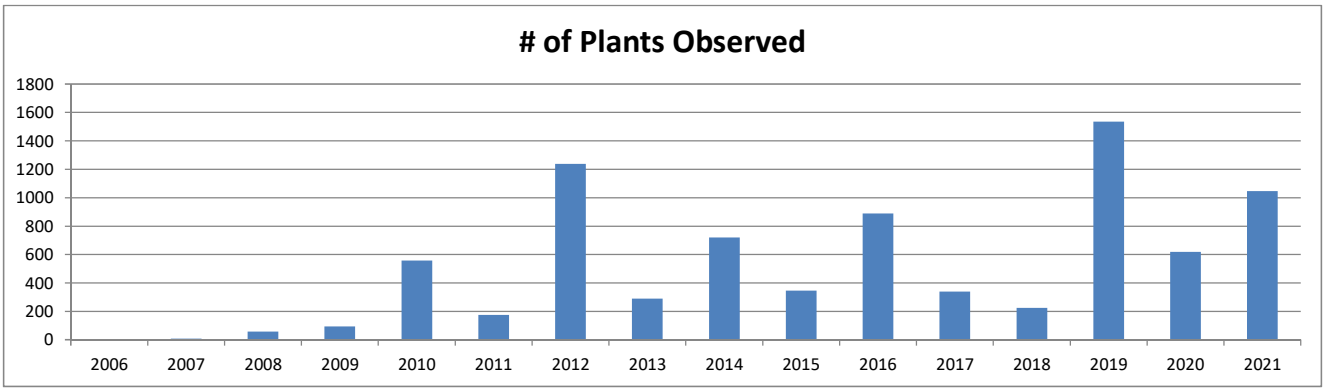


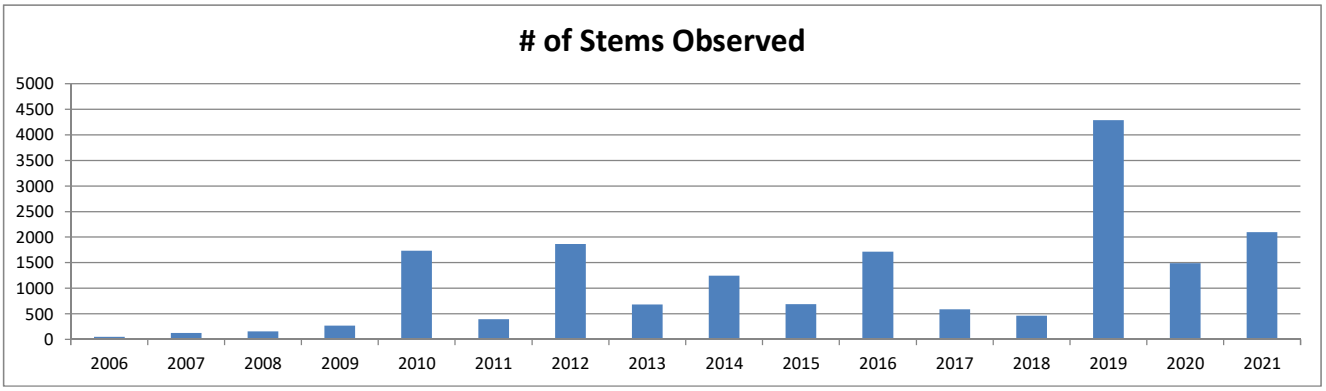


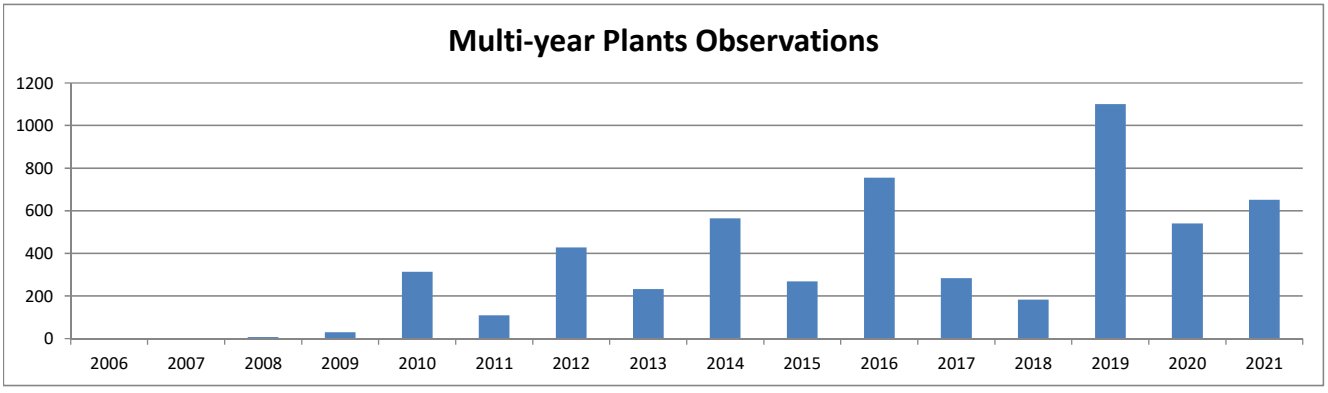
We Energies - Purple Loosestrife Monitoring 2006-2021 on Way Dam Reservoir

Total Observations



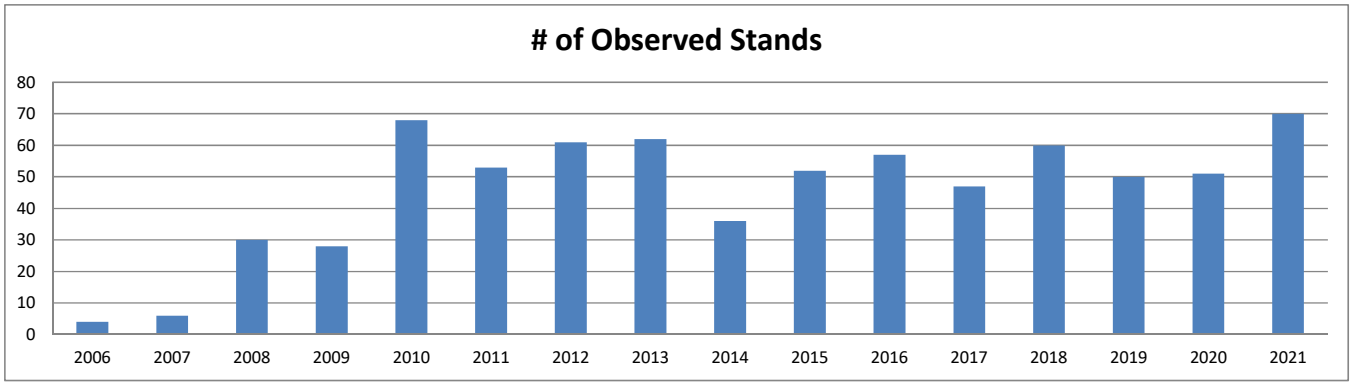


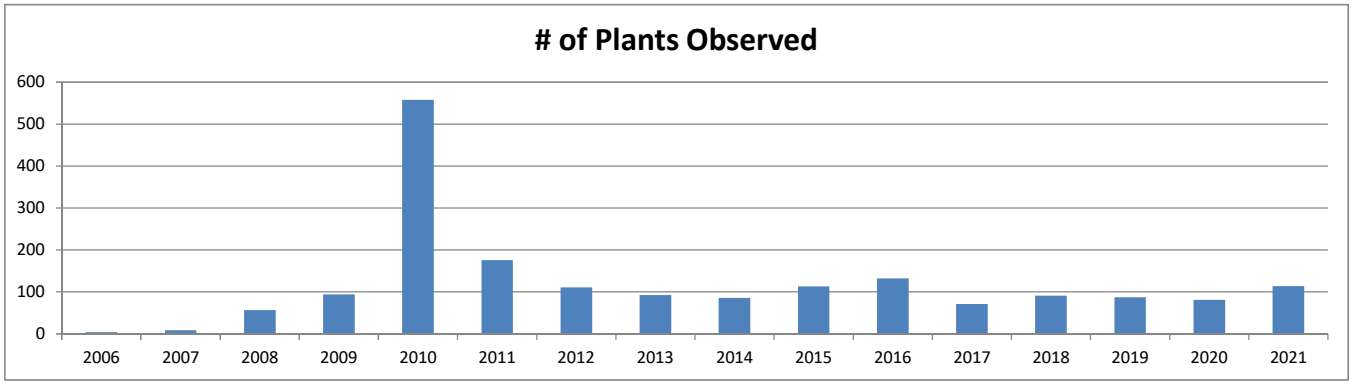


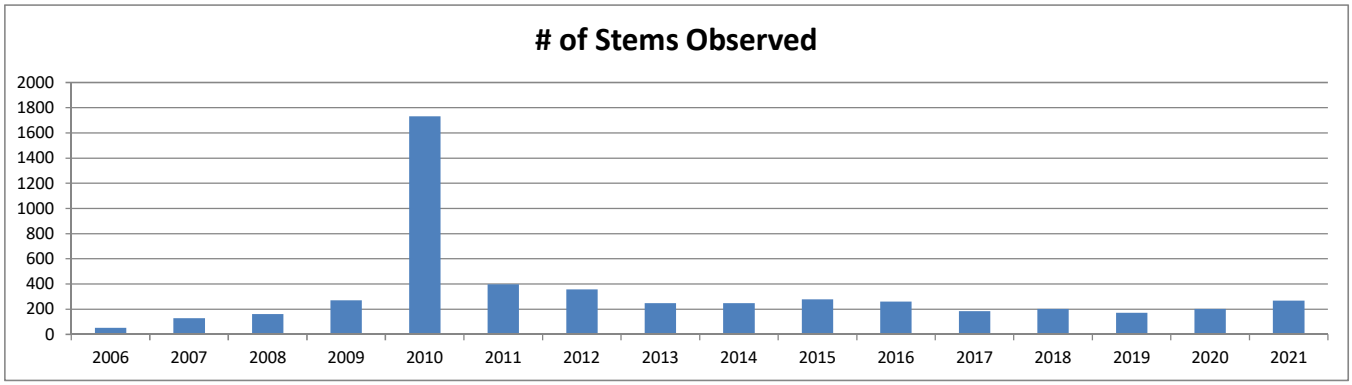


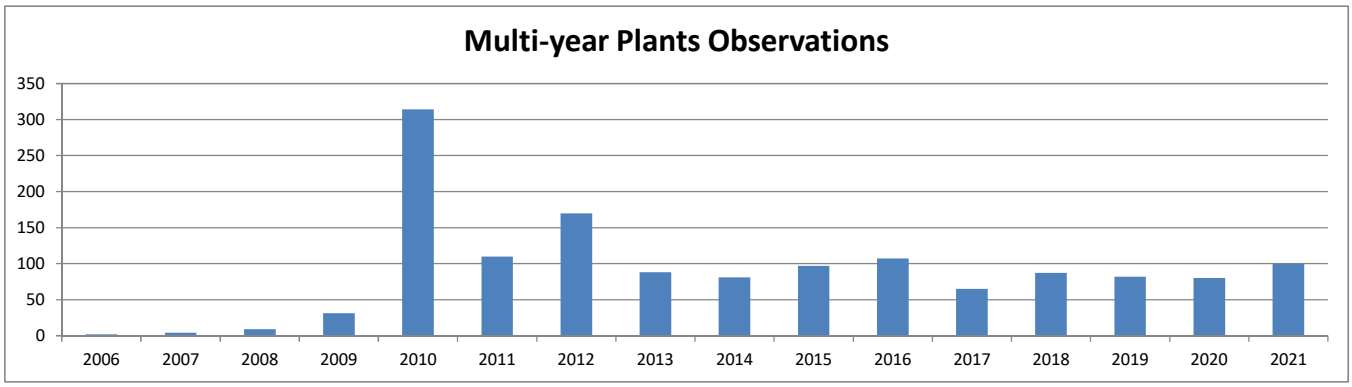
We Energies - Purple Loosestrife Monitoring 2006-2021 on Way Dam Reservoir

July survey only minus largest 2012-2021 stands



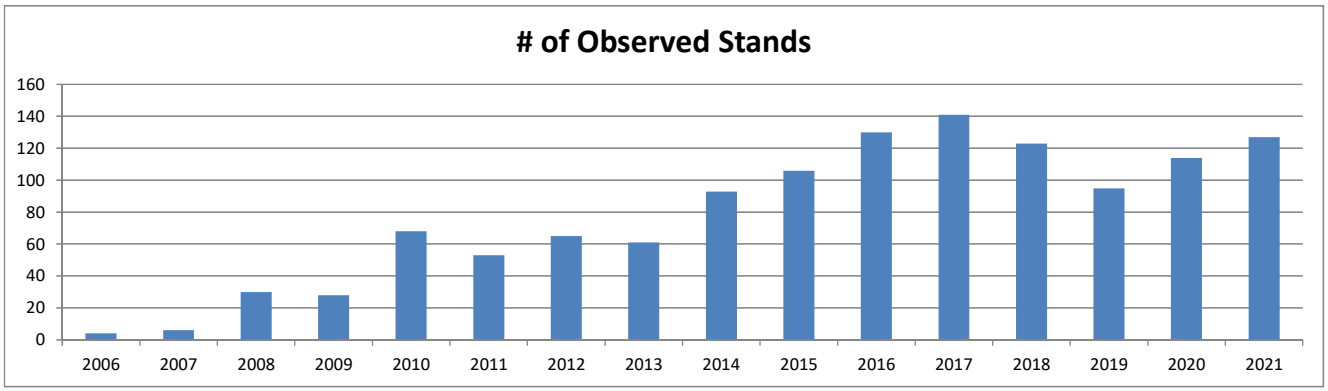


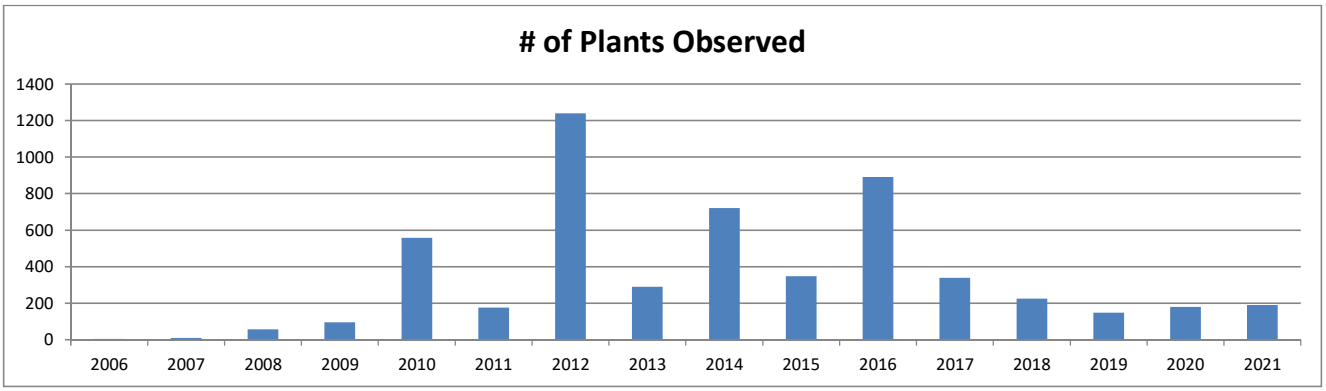


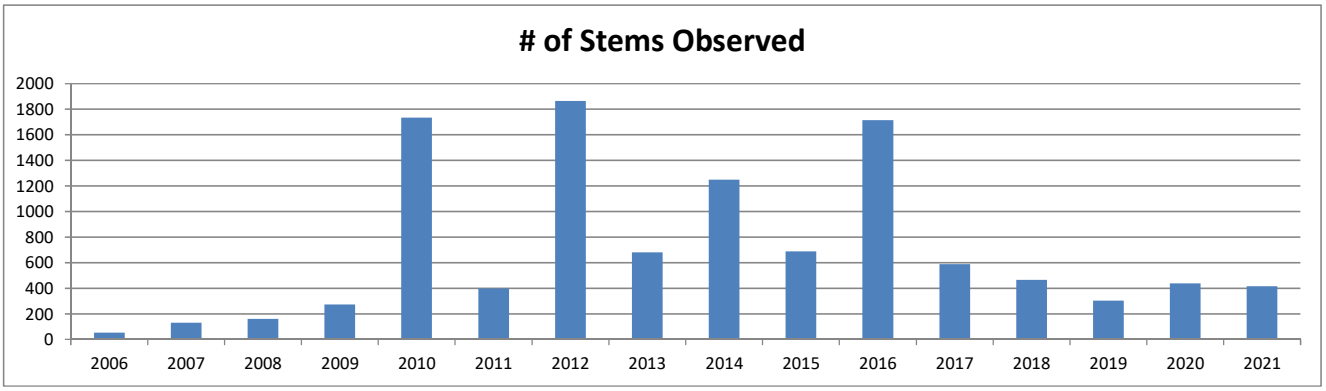


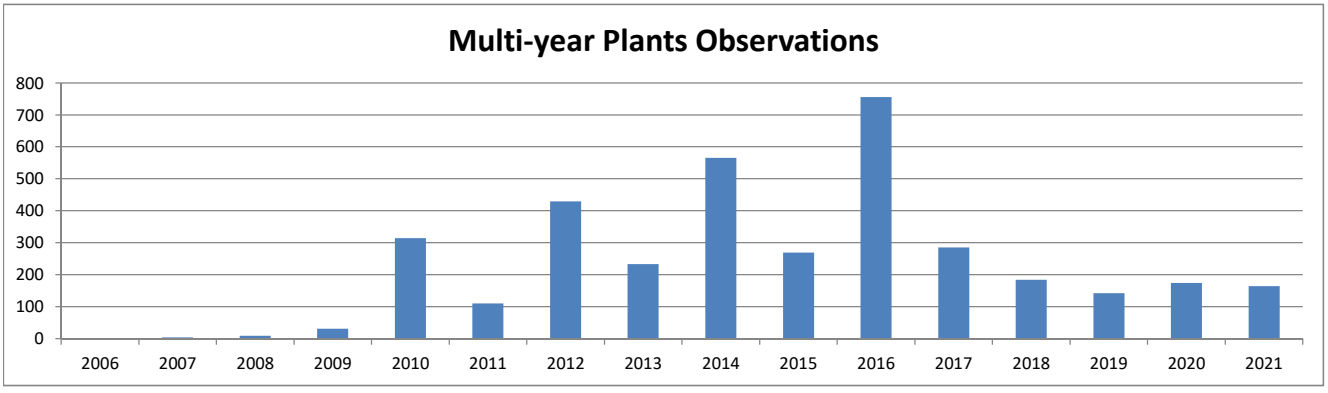
We Energies - Purple Loosestrife Monitoring 2006-2021 on Way Dam Reservoir

Total (July & August Surveys Combined minus largest stands)









We Energies Hydroelectric Operations
Michigamme River Purple Loosestrife Monitoring (2009-2021)

July Survey Only

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
# of Observed Stands	56	140	149	217	99	221	168	157	125	142	132	137	132
# of Plants Observed	113	362	592	915	361	535	292	352	260	275	241	288	239
# of Stems Observed	361	1234	1149	1732	585	873	487	584	413	491	472	457	411
Stems Observed per Plant	3.19	3.41	1.94	1.89	1.62	1.63	1.67	1.66	1.59	1.79	1.96	1.59	1.72
Multi-year Plants Observations	79	317	282	525	280	451	230	278	179	217	173	215	180

Total (July & August Surveys Combined)

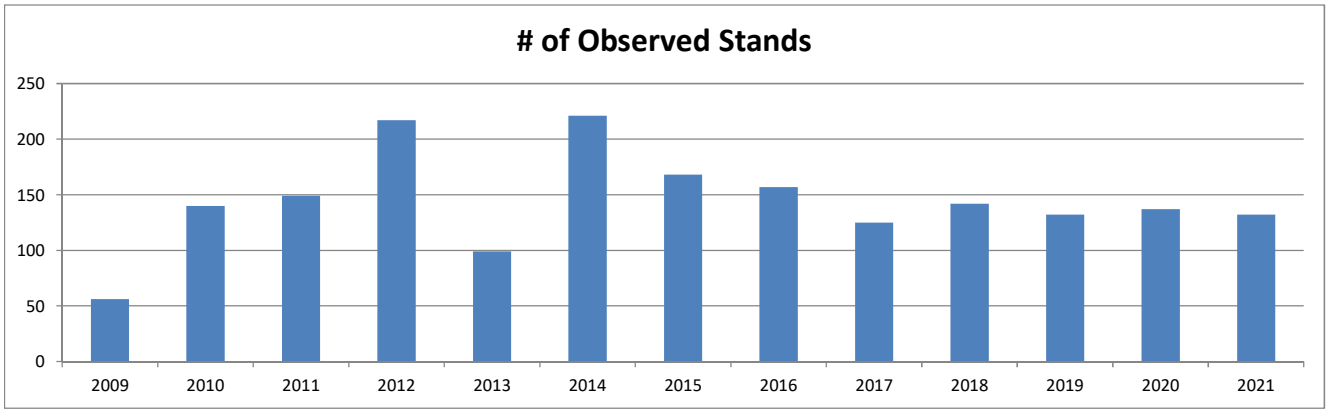
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
# of Observed Stands	56	140	149	217	192	384	328	354	248	278	238	216	225
# of Plants Observed	113	362	592	915	686	994	755	859	483	552	445	402	424
# of Stems Observed	361	1234	1149	1732	1132	1750	1473	1470	772	1023	901	637	740
Stems Observed per Plant	3.19	3.41	1.94	1.89	1.65	1.76	1.95	1.71	1.60	1.85	2.02	1.58	1.75
Multi-year Plants Observations	79	317	282	525	524	832	636	653	364	435	331	313	310

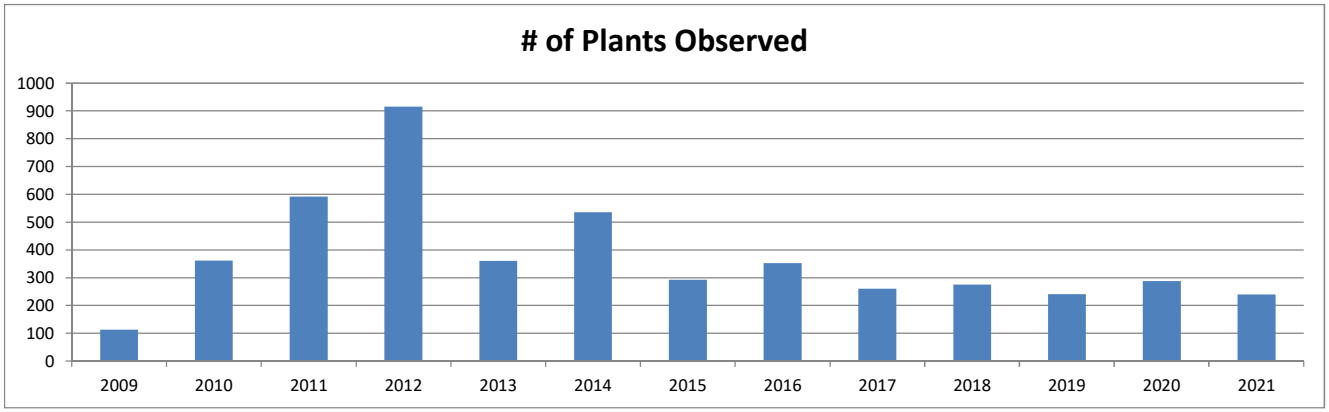
July Survey with Largest Stands Removed (2013-2021)

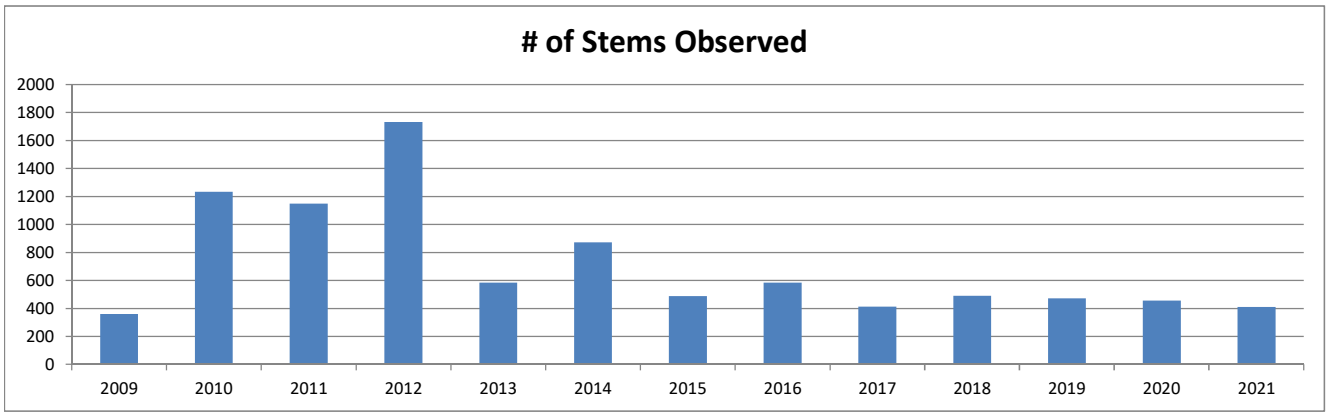
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
# of Observed Stands	56	140	149	217	96	219	166	156	124	139	131	137	130
# of Plants Observed	113	362	592	915	242	498	257	324	248	239	230	288	213
# of Stems Observed	361	1234	1149	1732	399	817	436	529	396	443	439	457	375
Stems Observed per Plant	3.19	3.41	1.94	1.89	1.65	1.64	1.70	1.63	1.60	1.85	1.91	1.59	1.76
Multi-year Plants Observations	79	317	282	525	192	417	202	255	171	206	164	215	166

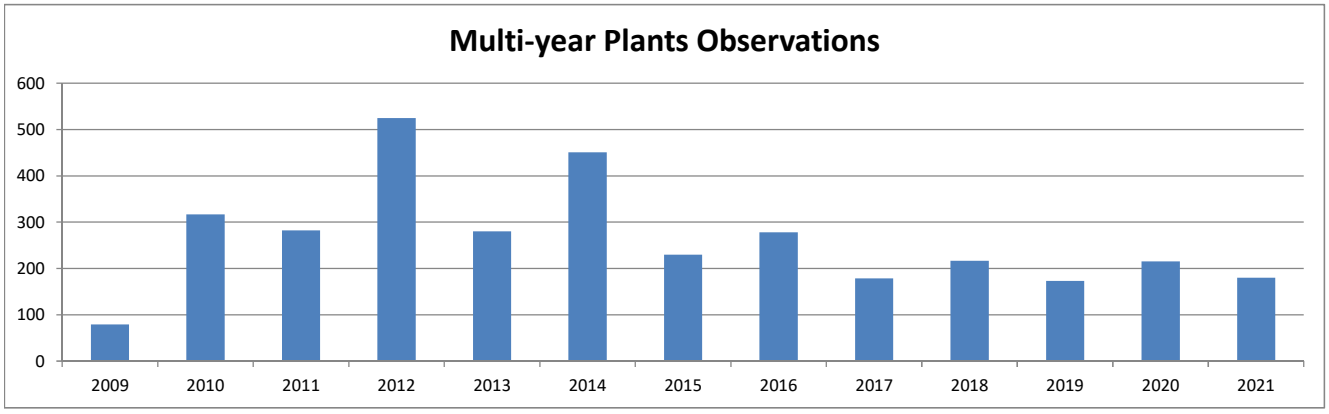
We Energies - Purple Loosestrife Monitoring 2009-2021 on Michigamme River

July Survey Only



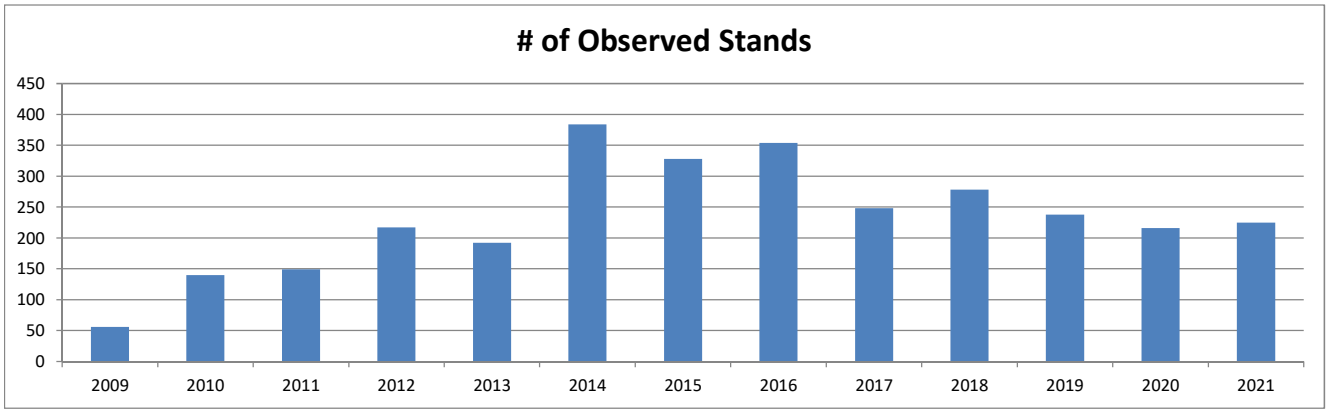


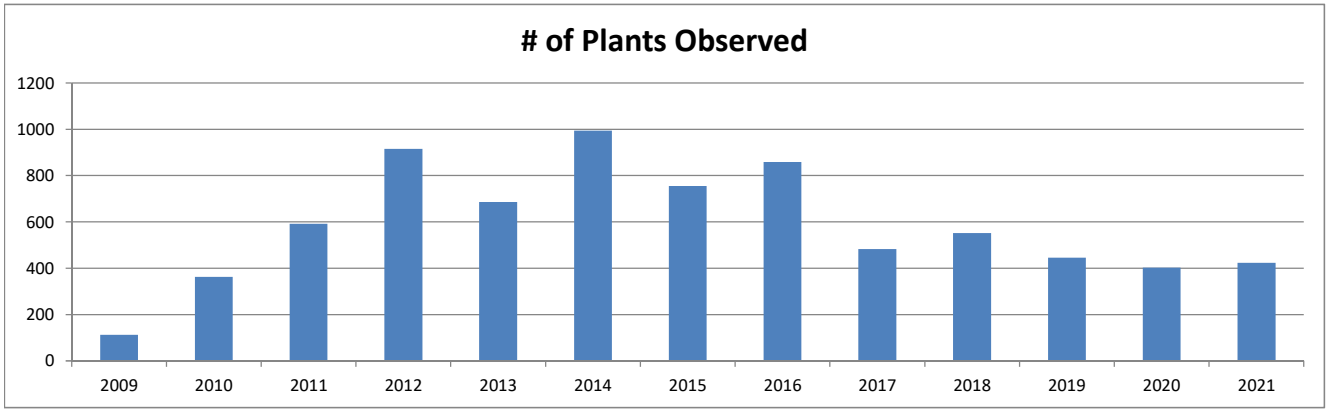


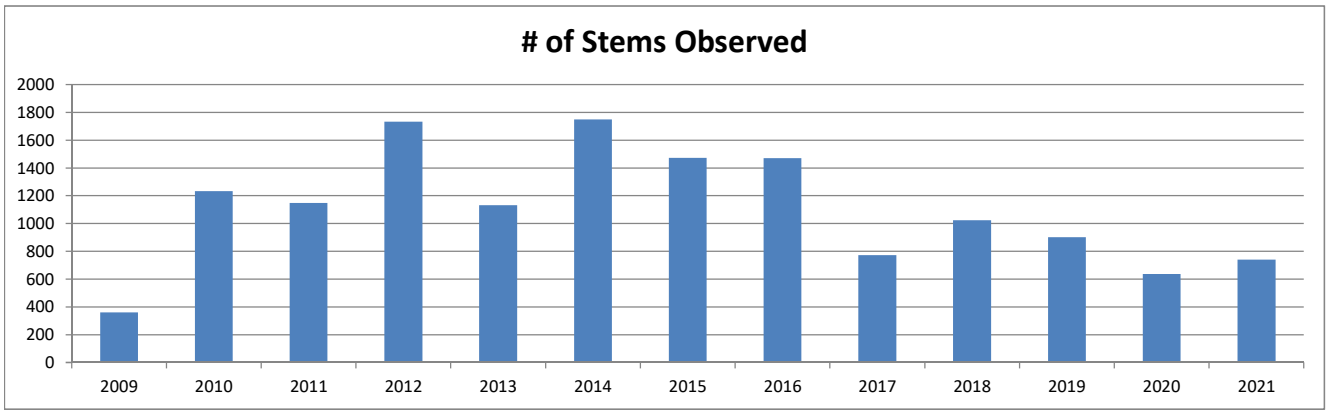


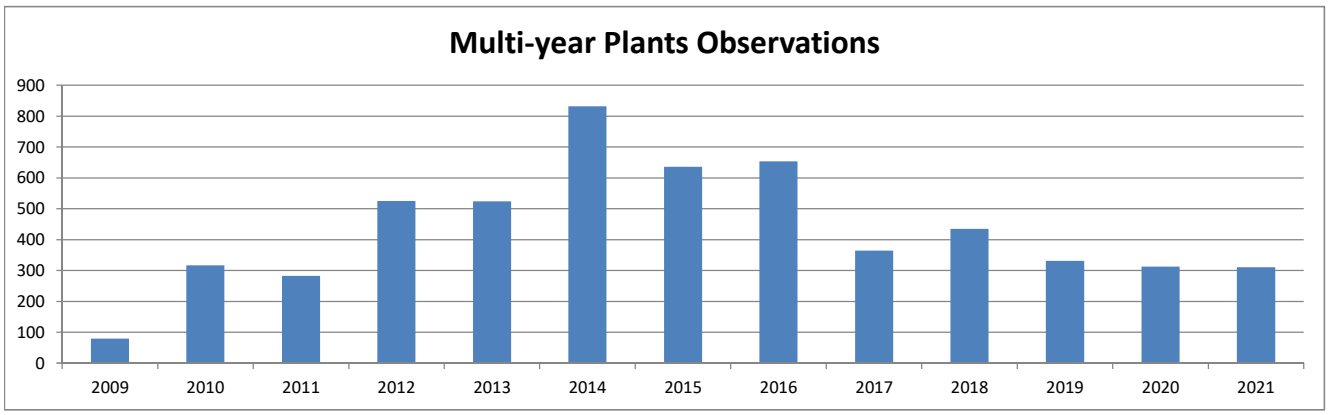
We Energies - Purple Loosestrife Monitoring 2009-2021 on Michigamme River

Total Observations









We Energies - Purple Loosestrife Monitoring 2009-2021 on Michigamme River

July survey only minus largest 2013-2021 stands