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December 30, 2013

The Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, D.C. 20426
eFiled FERC Online 12/30/2013

RE: WVIC Project 2113; Purple Loosestrife Control Plan – 2013 Annual Monitoring Report & Five-Year Summary and Proposed Purple Loosestrife Monitoring Plan.

In accordance with the Federal Energy Regulatory Commission (FERC) "Order Amending Purple Loosestrife Control Plan" (Order) issued June 16, 2009, Wisconsin Valley Improvement Company (WVIC) herewith submits the Purple Loosestrife Control Plan – 2013 Annual Monitoring Report & Five-Year Summary and Proposed Purple Loosestrife Monitoring Plan (Attachment 1).

In compliance with the Order, page 5, (B), the 2013 Monitoring Report includes: 1) annual monitoring results identifying locations and abundance of purple loosestrife..., 2) information and/or results identifying the distribution and effectiveness of *Galerucella sp.* beetles..., and 4) management options used the previous year. The Five-Year Summary and Proposed Purple Loosestrife Monitoring Plan outline WVIC's future monitoring and management strategy that was developed in consultation with the U.S. Fish and Wildlife Service (USFWS) and Wisconsin DNR (WDNR) as required in section (B) and (C) of the Order. Documentation of comments and recommendations from USFWS and WDNR are included in Attachment 2.

Sincerely,

Ben Niffenegger
Environmental Specialist

Enclosures:
Attachment 1: Purple Loosestrife Annual Monitoring Report-2013 & Five-Year Summary and Proposed Purple Loosestrife Monitoring Plan. .
Attachment 2: Documentation of agency consultation and correspondence.

Cc Via Email: Pat Grant, Environmental Protection Specialist, FERC

Attachment 1

Wisconsin Valley Improvement Company

Purple Loosestrife Annual Monitoring Report-2013 & Five-Year Summary and Proposed Loosestrife Monitoring Plan

December 30, 2013

Wisconsin Valley Improvement Company

Purple Loosestrife Annual Monitoring Report – 2013

&

Five-Year Summary and Proposed Purple Loosestrife Monitoring Plan

December 30, 2013

Introduction

In compliance with Wisconsin Valley Improvement Company's (WVIC) 1996 FERC license (Project No. 2113), the purple loosestrife control program became a part of WVIC's FERC approved 1997 Fish and Wildlife Management Plan (Article 413). The Fish and Wildlife Management Plan was updated in 2001, 2006 and 2011 in accordance with a five-year update requirement in WVIC's FERC license. WVIC drafted a Modified Purple Loosestrife Control Plan in November 2008. The purpose of the Modified Plan was to terminate and/or phase out chemical control of purple loosestrife (PL) and implement biological control with *Galerucella sp.* beetles. The Plan was sent to Wisconsin DNR (WDNR) and US Fish and Wildlife Service (USFWS) for review and comment. Comments were received from WDNR and incorporated into the Plan. The Plan was sent to FERC November 26, 2008 as an amendment request to WVIC's Fish and Wildlife Management Plan. FERC issued an Order Amending the Plan June 16, 2009 and approved the Plan with minor reporting modifications.

This report represents the fifth in a series of five annual Purple Loosestrife Monitoring Reports and includes proposals for future monitoring and management as required in the June 16, 2009 FERC Order.

2013 Field Monitoring Results

Willow Reservoir – On August 7, 2013 WVIC monitored the area of Willow Reservoir where purple loosestrife (PL) has historically occurred. Reservoir elevation was 1525.12 ft NGVD (4.23 ft. below full). The area was accessed by boat and then surveyed by walking the islands and exposed shoreline and counting both immature and mature plants. GPS readings were taken every 100 ft where plants were observed. The relative abundance of PL was recorded as A (1-5 plants), B (6-50 plants), or C (50+ plants). Figure 1 is a distribution and relative abundance map of recorded locations in 2013 and Table 1 lists GPS coordinates for each observation.

Distribution of PL in 2013 was limited to the general area of small islands in the southeastern most portion of the reservoir where PL was first observed in 1997 and has been observed annually since. In addition to the islands several small beds were observed in 2012 on the adjacent shoreline where PL had not been observed since 2008. The six shoreline beds discovered in 2012 declined to only three beds in 2013. After an overall increase in 2012, relative abundance of PL beds with 1-5 plants and dense beds with 50+ plants decreased in 2013 and beds with 6-50 plants remained the same. The number of beds observed with 1-5 plants decreased from nine beds in 2012 to only four beds in 2013. No beds with 50+ plants were identified in 2013 compared to 2012 when one bed was observed. The general decrease in PL abundance and distribution in 2013 could be attributed to higher water levels during the growing season and near record ice-off dates that resulted in a later and cooler spring (See Figure 8). PL was not observed outside of its historic range at Willow.

Galerucella sp. beetles have not been observed at Willow Reservoir to date although they are present in the Tripoli area to the southwest, Rice Reservoir to the southeast and the Minocqua Reservoir system to the

northeast, all within 10-12 miles of Willow. It is unlikely that the low relative abundance of PL would support a sustained beetle population.

Rice Reservoir – On August 6-8, 2013 WVIC monitored the portions of Rice Reservoir where PL has historically occurred. Reservoir elevation was 1460.39 ft NGVD (2.86 ft below full) during the monitoring period. The general areas were accessed by boat and by walking the exposed shoreline and counting both immature and mature plants.

Relative abundance and distribution of PL and *Galerucella sp.* beetle distribution was recorded with GPS. Figure 2 is a distribution map of recorded PL and beetle activity locations in 2013 and Table 2 lists GPS coordinates for each observation. Relative abundance declined with 103 beds observed in 2012 and only 98 beds in 2013. Dense PL beds of 50+ plants increased from 16 beds in 2012 to 17 beds (50+ plants) in 2013. The greatest decrease in relative abundance was PL beds with 6-50 plants from 51 beds in 2012 to 42 beds (6-50 plants) in 2013. Beds with 1-5 plants increased from 36 beds in 2012 to 39 beds (1-5 plants) in 2013. The general decrease in PL abundance and distribution in 2013 could be attributed to an increased number of sites with beetle activity discussed below in conjunction with higher water levels during the growing season and near record ice-off dates (See Figure 9). PL was not observed outside of its historic range at Rice.

Galerucella sp. beetle activity increased from 13 beds in 2012 to 18 PL beds in 2013 (Figure 7). The number of beds with observed beetles has increased annually since first being confirmed in only two beds at Rice Reservoir in 2009. All observations in the eighteen beds were adult beetles. Significant leaf and stem damage characteristic of *Galerucella sp.* beetles was also observed in each of the beds. Nine of the dense beds of 50+ plants are now inhabited by beetles. The remaining nine beds with beetles present contain 6-50 plants and are in close proximity to dense beds. This is only the fifth year beetles have inhabited Rice Reservoir, and they've already expanded to six separate areas within the reservoir (Figure 2). Continued monitoring will determine their ultimate effectiveness but they have exhibited an ability to expand naturally.

Timed Beetle Counts - During the 2013 monitoring period, WVIC tested a Timed Beetle Count as a method of acquiring additional quantitative data on beetle populations. The beetle counts were conducted at each of the 50+ plant beds beetles were observed in and lasted three minutes per site. Once the three minute count began, plants within the bed boundary were inspected for beetles in both adult and larval stage. Plants were not touched and care was given to avoid brushing up against plants during the count since we have observed beetles falling from plants after being disturbed during previous walk-throughs. After the three minute count was complete, the totals were recorded in the comments section of the GPS for the bed surveyed. Results from the beetle counts are displayed in Table 2.

After attempting a timed beetle count at a less dense bed with 6-50 plants, it was determined in the field that too much time was spent trying to locate individual loosestrife plants and walking from plant to plant during the timed counts. The variability in spacing amongst individual plants within a low to moderate density bed meant the total number of beetles observed would be biased based on the proximity and arrangement of plants within a given bed. As a result, only dense beds with 50+ plants were utilized for the timed counts in 2013 because the density and number of plants ensured all time was being utilized for beetle searching opposed to walking and looking for plants. Timed beetle counts are not being proposed in the future due to seasonal and weather related factors that can influence whether beetles are active and visible on a given day. Instead, vegetative damage assessments are going to be used as discussed in the future monitoring section.

Spirit Reservoir – On August 6, 2013 WVIC monitored the portion of Spirit Reservoir where PL has historically occurred. Reservoir elevation was 1434.67 ft. NGVD (3.21 ft below full). The general areas were accessed by boat and by walking the exposed shoreline/causeway and counting both immature and mature plants. Relative abundance and distribution of PL was recorded with GPS. No *Galerucella sp.* beetles were observed in 2013. Figure 3 is a distribution map of recorded PL locations in 2013 and Table 3 lists GPS coordinates for each observation.

Distribution of PL in 2013 (Figure 3) remained confined to the Highway 86 bay and similar to previous years. Overall relative abundance of beds declined from 23 beds in 2012 to 15 beds in 2013. Relative abundance of dense PL beds (50+ plants) also declined from 2 beds in 2012, back to 1 dense bed in 2013, which is similar to 2009-2011. Similar to the other reservoirs, the higher water levels during the growing season and late ice-out may have attributed to the decreased number of PL plants observed in 2013 (See figure 10). PL was not observed outside of its historic range at Spirit.

Galerucella sp. beetles were not observed in 2013. The same area on Spirit where beetles were previously observed in 2009-2011 was chemically treated by a private landowner in 2012. The lack of beetles could be related to the spraying or the decline in relative abundance of high density beds of 50+ plants. Despite the lack of beetle activity relative abundance declined.

Five-Year Summary and Proposed Purple Loosestrife Monitoring Plan

History

1996-2008

WVIC began using chemical control as a method for controlling PL in 1996. The spraying effort was increased beginning in 2002 to include two seasonal applications with the goal of eradicating PL on the reservoirs. Twelve years after beginning the spraying program, overall abundance was reduced but established beds of PL were unable to be eradicated. The reduction of abundance allowed native plants to become reestablished in many beds which can still be observed today.

WVIC drafted a Modified Purple Loosestrife Control Plan in November 2008. The purpose of the Modified Plan was to terminate and/or phase out chemical control of purple loosestrife (PL) and implement biological control with *Galerucella sp.* beetles. The Plan was sent to Wisconsin DNR (WDNR) and US Fish and Wildlife Service (USFWS) for review and comment. Comments were received from WDNR and incorporated into the Plan. The Plan was sent to FERC November 26, 2008 as an amendment request to WVIC's Fish and Wildlife Management Plan. FERC issued an Order Amending the Plan June 16, 2009 and approved the Plan with minor reporting modifications.

2009-2013

After an initial increase in relative abundance at all three reservoirs from 2009 to 2010, relative abundance declined significantly in 2011 to the lowest observed levels of the 5-year monitoring period. The relative abundance then rebounded in 2012 and increased to similar levels as found in 2010. Results from 2013 monitoring indicate a general decrease in relative abundance of PL at Willow, Rice and Spirit reservoirs compared to 2012. Graphs depicting population changes at each of the reservoirs between 2009-2013 can be found in Figures 4-6. Note: Willow Reservoir monitoring data was not collected in 2009 because low water levels prevented access to the PL areas by boat and reservoir bottom conditions were unsafe for travel by foot.

What is not depicted in graphs are the underlying factors influencing the relative abundance data. In back to back years, we observed one of the earliest ice-out dates in 2012 which was followed by one of the latest ice-out dates in 2013. Spring reservoir refill rates and water elevations throughout the open water season fluctuate from year to year (See Figures 8-10). Growing conditions like temperature, precipitation, and wind at varying times of the season have unrecorded influence on plant vigor, seed development and germination rates. Competition from native plant communities and impacts from biological controls like beetles add another level of stress and influence on populations. WVIC's monitoring results from the last five years are a reflection of the multitude of these aforementioned variables that can work independently or in conjunction with each other from year to year to alter PL relative abundance.

Rice Reservoir - Despite the fluctuations in PL populations, WVIC tracked a steady increase in the number of sites where beetles were observed indicating an expanding beetle population on Rice Reservoir. In 2009 there were two observed beetle locations and by 2013, eighteen beetle sites were identified (Figure 7). This expansion of beetles may represent a population that is not at carrying capacity yet and bodes well for biological control of PL in the coming years. Based on the natural expansion of the beetle population at Rice Reservoir, introductions of additional beetles are not proposed at this time. With continued monitoring of the beetle populations and proposed PL damage monitoring, a better understanding of the effects beetles are having on PL abundance will be gained to determine whether additional beetle introductions need to be considered in the future.

Spirit & Willow Reservoirs - While beetle populations did not become established at Willow or Spirit Reservoirs, the PL populations did not expanded beyond historic ranges at either reservoir and relative abundance is declining at both. Despite fluctuations from year to year, the 2013 monitoring results show the second lowest relative abundance levels of PL since chemical spraying was discontinued on these reservoirs. The current decline from 2012-2013 and low relative abundance of PL at both Spirit and Willow Reservoirs are unlikely to support a sustained beetle population. Providing PL populations continue

to remain near the levels observed over the last five years, beetle introduction at these sites is not being proposed at this time. If PL populations expand in the future, potential beetle releases can be discussed during the annual review and comment period with the agencies.

Proposed Monitoring and Management

Goal
Maintain or reduce PL relative abundance at or below the range in levels observed post chemical control (2009-2013).

Management
WVIC proposes to continue managing PL using biological control methods and eliminating chemical applications to foster the continued spread of *Galerucella sp.* beetles. Biological control will be the primary management strategy used for PL in abundance categories of 6-50 plants and 50+ plants. WVIC is also proposing limited mechanical control for new pioneer sites with 1-5 plants present. Plants within these low density sites located in outlying areas from main populations will be hand-pulled when soil and site conditions allow for entire uprooting. If individual plants are found in areas with compacted soils or extensive vegetative root mats inhibit successful hand pulling efforts, PL inflorescences will be cut. Whether plants are hand-pulled or inflorescences cut, all PL material will be bagged and safely disposed of to prevent seed dispersal. Sites where mechanical control occurs will continue to be monitored in subsequent years to track responses and sprouting.

Monitoring
WVIC proposes to continue biological control monitoring of PL populations and add additional monitoring components to assess vegetation damage and impacts from beetle populations. Annual monitoring surveys at the three reservoirs (Willow, Rice and Spirit) will be conducted where PL has historically occurred during late-July or early-August to document PL distribution and abundance along with documenting any continued immigration and distribution of *Galerucella sp.* beetles. Where PL has not historically occurred, WVIC will continue to rely on the agencies and public's assistance with reporting newly established plant locations. WVIC maintains PL information posters at its boat landings asking the public to report any sightings of PL and all reports are followed up with field inspections.

The historical monitoring areas will be accessed by boat and then surveyed by walking the exposed shorelines to count both immature and mature plants. GPS readings will be taken every 100 ft. where plants were observed. PL relative abundance will be recorded as A (1-5 plants), B (6-50 plants), or C (50+ plants). WVIC will incorporate vegetative damage assessments where beetles are observed. Recording PL vegetative damage is being added to the existing monitoring protocol to provide another component to assist in making future management decisions concerning beetle populations and their effectiveness in maintaining or reducing PL relative abundance.

Beetle Feeding and Vegetative Damage Assessment - While previous monitoring has indicated beetles are expanding to more sites throughout Rice Reservoir, our monitoring protocol did not provide any indication of how much damage the beetles were inflicting on PL plants. Determining whether beetles were present across an entire site or perhaps only on the periphery was another component not previously recorded that could help to provide further insight into the size and distribution of beetles across the landscape. As a result, WVIC is proposing two additional monitoring parameters to address the following questions. What percentage of plants within a site exhibit signs of beetle feeding? What is the average level of leaf tissue damage among the plants beetles are feeding on within a given site?

When leaf damage characteristic of *Galerucella sp.* beetles is identified during monitoring, WVIC will determine which abundance category the PL bed falls into (1-5 plants, 6-50, or 50+) and visually determine the edge of the bed to ensure damage assessments do not include adjacent beds. During a walkthrough the percent of plants within the site that exhibit leaf damage from beetle feeding will be recorded using one of the following categories: 76-100%, 51-75%, 26-50%, or 1-25%. Using the same categories, we will also record the average percent of leaf tissue area removed by beetle feeding per

plant across the site. (Example Results: 26-50% of plants within site have signs of beetle feeding, and among those plants 76-100% of the leaf tissue has been removed.) The percentage categories were chosen to be easily assessed in the field and replicable from year to year with only a minimum amount of training required if new field personnel are utilized for monitoring in the future. All monitoring data will be entered into the comments section of the GPS for the corresponding site and included in annual summary reports, tables and graphs. The vegetative damage assessments will add another series of data to help broaden our understanding of the distribution and impacts beetles have on PL sites across the landscape and assist with making sound future management decisions.

Reporting

WVIC will submit an annual report depicting relative abundance of PL and beetle activity along with correlating tables to WDNR and USFWS for review and consultation in the fall of each year. The report will include monitoring data and GPS locations of PL abundance, vegetative damage assessments and beetle distribution on Willow, Rice, and Spirit in addition to proposals for future monitoring and management options if warranted. After agency consultation, WVIC will submit a finalized annual report and consultation documentation to FERC by December 31st of each year.

Figure 1

Table 1

Purple Loosestrife Survey - 2013

Willow Reservoir

Number	Latitude		Longitude		Amount	Beetle Activity
1	45°	41.41159	89°	50.45652	1-5 plants	no
2	45°	41.39956	89°	50.43089	6-50 plants	no
3	45°	41.35425	89°	50.43436	6-50 plants	no
4	45°	41.34072	89°	50.44911	6-50 plants	no
5	45°	41.30135	89°	50.47594	6-50 plants	no
6	45°	41.18581	89°	50.40503	1-5 plants	no
7	45°	41.15722	89°	50.44154	6-50 plants	no
8	45°	41.15351	89°	50.40062	1-5 plants	no
9	45°	41.13237	89°	50.41843	1-5 plants	no

Figure 2

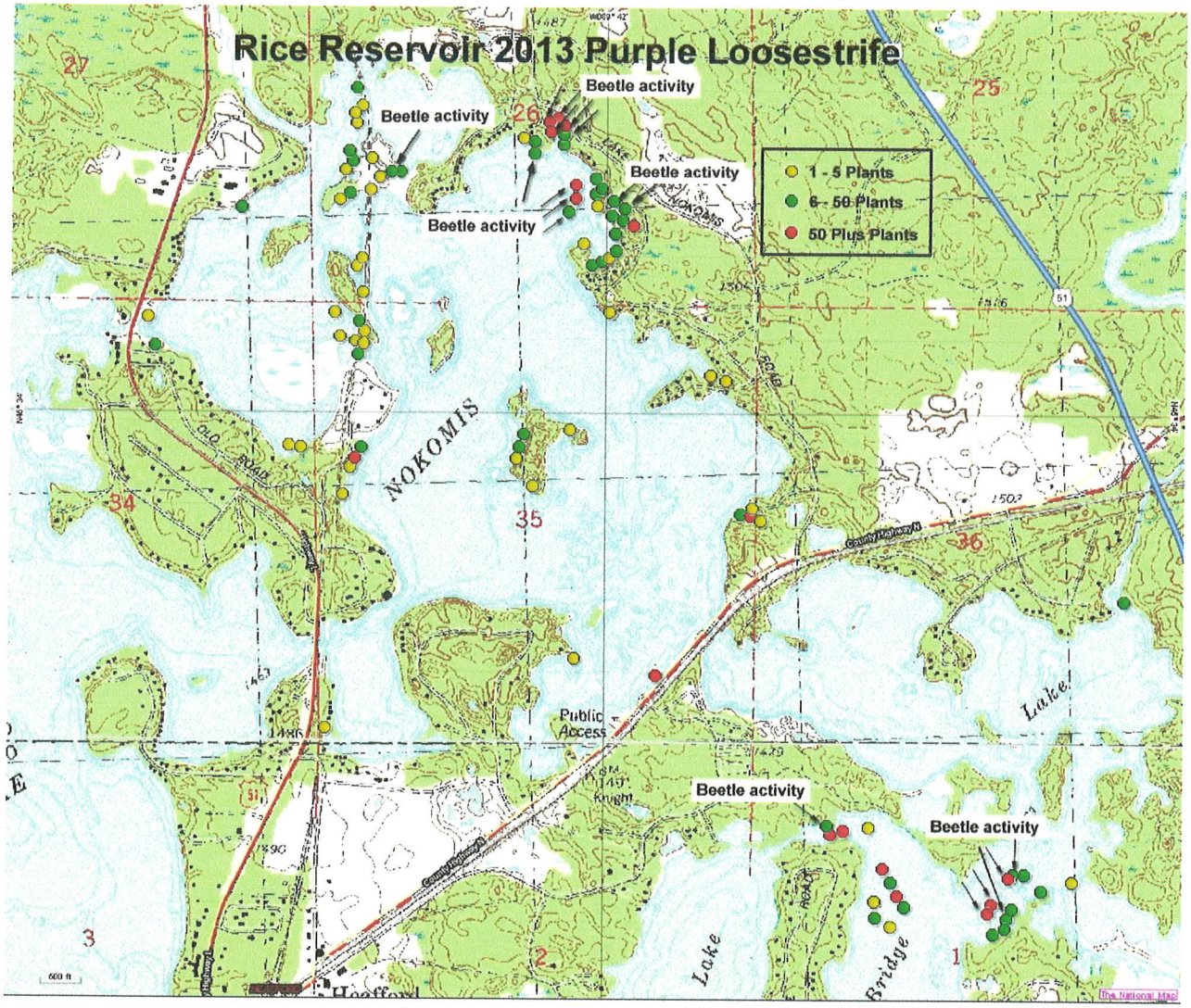


Table 2

Purple Loosestrife Survey - 2013

Rice Reservoir

Number	Latitude		Longitude		Amount	Beetle Activity	Timed Count
1	45°	33.83403	89°	42.74529	1-5 plants		
2	45°	34.13521	89°	42.68847	1-5 plants		
3	45°	34.16148	89°	42.68712	1-5 plants		
4	45°	34.18112	89°	42.70191	6-50 plants		
5	45°	34.23969	89°	42.69110	1-5 plants		
6	45°	34.29162	89°	42.71011	1-5 plants		
7	45°	34.30837	89°	42.69316	1-5 plants		
8	45°	34.43817	89°	42.72913	6-50 plants		
9	45°	34.42518	89°	42.75807	1-5 plants		
10	45°	33.47325	89°	41.85377	50+ plants		
11	45°	34.48454	89°	42.74250	1-5 plants		
12	45°	33.62454	89°	40.52323	6-50 plants		
13	45°	34.50159	89°	42.72136	6-50 plants		
14	45°	33.06402	89°	40.66769	1-5 Plants		
15	45°	34.52239	89°	42.73168	6-50 plants		
16	45°	33.04680	89°	40.75343	6-50 plants		
17	45°	34.57886	89°	42.71052	1-5 plants		
18	45°	34.59856	89°	42.71790	1-5 plants		
19	45°	33.01083	89°	40.83749	6-50 plants		
20	45°	34.40775	89°	43.03762	6-50 plants		
21	45°	32.99016	89°	40.85264	6-50 plants	yes	
22	45°	34.18795	89°	43.30280	1-5 plants		
23	45°	34.13028	89°	43.28184	6-50 plants		
24	45°	33.07861	89°	40.80288	6-50 plants		
25	45°	33.93199	89°	42.89819	1-5 plants		
26	45°	33.07926	89°	40.83362	6-50 plants	yes	
27	45°	33.92931	89°	42.86681	1-5 plants		
28	45°	33.07105	89°	40.84534	50+ plants	yes	54
29	45°	34.15030	89°	42.75475	1-5 plants		
30	45°	33.01988	89°	40.89423	50+ plants	yes	32
31	45°	34.19978	89°	42.77109	1-5 plants		
32	45°	33.00070	89°	40.90623	50+ plants	yes	
33	45°	33.36780	89°	42.79143	1-5 plants		
34	45°	32.95895	89°	40.88959	6-50 plants		
35	45°	34.30901	89°	41.99152	1-5 plants		

Table 2 (cont.)

Purple Loosestrife Survey - 2013

Rice Reservoir

Number	Latitude		Longitude		Amount	Beetle Activity	Timed Count
36	45°	32.96955	89°	40.85652	6-50 plants		
37	45°	34.32373	89°	41.97289	6-50 plants		
38	45°	32.97465	89°	41.18149	1-5 plants		
39	45°	32.99212	89°	41.22512	6-50 plants		
40	45°	34.35777	89°	41.97366	6-50 plants		
41	45°	33.02459	89°	41.22626	1-5 plants		
42	45°	34.41340	89°	42.02462	1-5 plants		
43	45°	33.17247	89°	41.24485	1-5 plants		
44	45°	34.44880	89°	42.01302	6-50 plants		
45	45°	33.16464	89°	41.31598	50+ plants		
46	45°	34.40118	89°	42.10737	6-50 plants	yes	
47	45°	33.15785	89°	41.35282	50+ plants		
48	45°	34.48154	89°	42.612109	6-50 plants	yes	
49	45°	33.17581	89°	41.363409	6-50 plants	yes	
50	45°	34.44452	89°	42.670131	1-5 plants		
51	45°	33.08976	89°	41.204056	50+ plants		
52	45°	33.06275	89°	41.179694	6-50 plants		
53	45°	33.03453	89°	41.163893	50+ plants		
54	45°	33.01270	89°	41.141755	6-50 plants		
55	45°	33.50731	89°	42.08584	1-5 plants		
56	45°	33.88823	89°	42.723586	1-5 plants		
57	45°	33.90670	89°	42.710495	50+ plants		
58	45°	33.92930	89°	42.693617	6-50 plants		
59	45°	34.14206	89°	42.712039	1-5 plants		
60	45°	33.79637	89°	41.615922	6-50 plants		
61	45°	33.79323	89°	41.586366	50+ plants		
62	45°	33.78356	89°	41.559148	1-5 plants		
63	45°	33.80931	89°	41.580788	1-5 plants		
64	45°	34.07480	89°	41.702483	1-5 plants		
65	45°	34.06402	89°	41.658247	1-5 plants		
66	45°	34.20088	89°	41.990684	1-5 plants		
67	45°	34.33750	89°	42.064154	1-5 plants		
68	45°	34.29470	89°	42.041257	6-50 plants		
69	45°	34.30175	89°	42.013838	6-50 plants		
70	45°	34.39361	89°	41.984679	6-50 plants		

Table 2 (cont.)

Purple Loosestrife Survey - 2013

Rice Reservoir

71	45°	34.38471	89°	41.952744	6-50 plants		
72	45°	34.37508	89°	41.923213	50+ plants		
73	45°	34.40871	89°	41.949872	6-50 plants	yes	
74	45°	34.42242	89°	41.978996	6-50 plants	yes	
75	45°	34.43712	89°	42.03154	6-50 plants		
76	45°	34.46778	89°	42.031369	6-50 plants		
77	45°	34.53596	89°	42.123156	6-50 plants		
78	45°	34.55734	89°	42.124424	6-50 plants		
79	45°	34.57476	89°	42.120928	50+ plants	yes	12
80	45°	34.58853	89°	42.139883	50+ plants	yes	12
81	45°	34.58240	89°	42.164053	50+ plants	yes	26
82	45°	34.56111	89°	42.160397	50+ plants	yes	54
83	45°	34.42921	89°	42.088561	50+ plants	yes	18
84	45°	34.45608	89°	42.088465	50+ plants	yes	29
85	45°	34.51815	89°	42.205257	6-50 plants	yes	
86	45°	34.54211	89°	42.206243	6-50 plants		
87	45°	34.54995	89°	42.235844	1-5 plants		
88	45°	34.47986	89°	42.586768	6-50 plants		
89	45°	34.46910	89°	42.644472	1-5 plants		
90	45°	34.50757	89°	42.666973	1-5 plants		
91	45°	34.64804	89°	42.712154	6-50 plants		
92	45°	34.61244	89°	42.697062	1-5 plants		
93	45°	33.90752	89°	42.253079	1-5 plants		
94	45°	33.92995	89°	42.244243	6-50 plants		
95	45°	33.95570	89°	42.231766	6-50 plants		
96	45°	33.85343	89°	42.205855	1-5 plants		
97	45°	33.96431	89°	42.101355	1-5 plants		
98	45°	34.11531	89°	42.7037	6-50 plants		

Figure 3

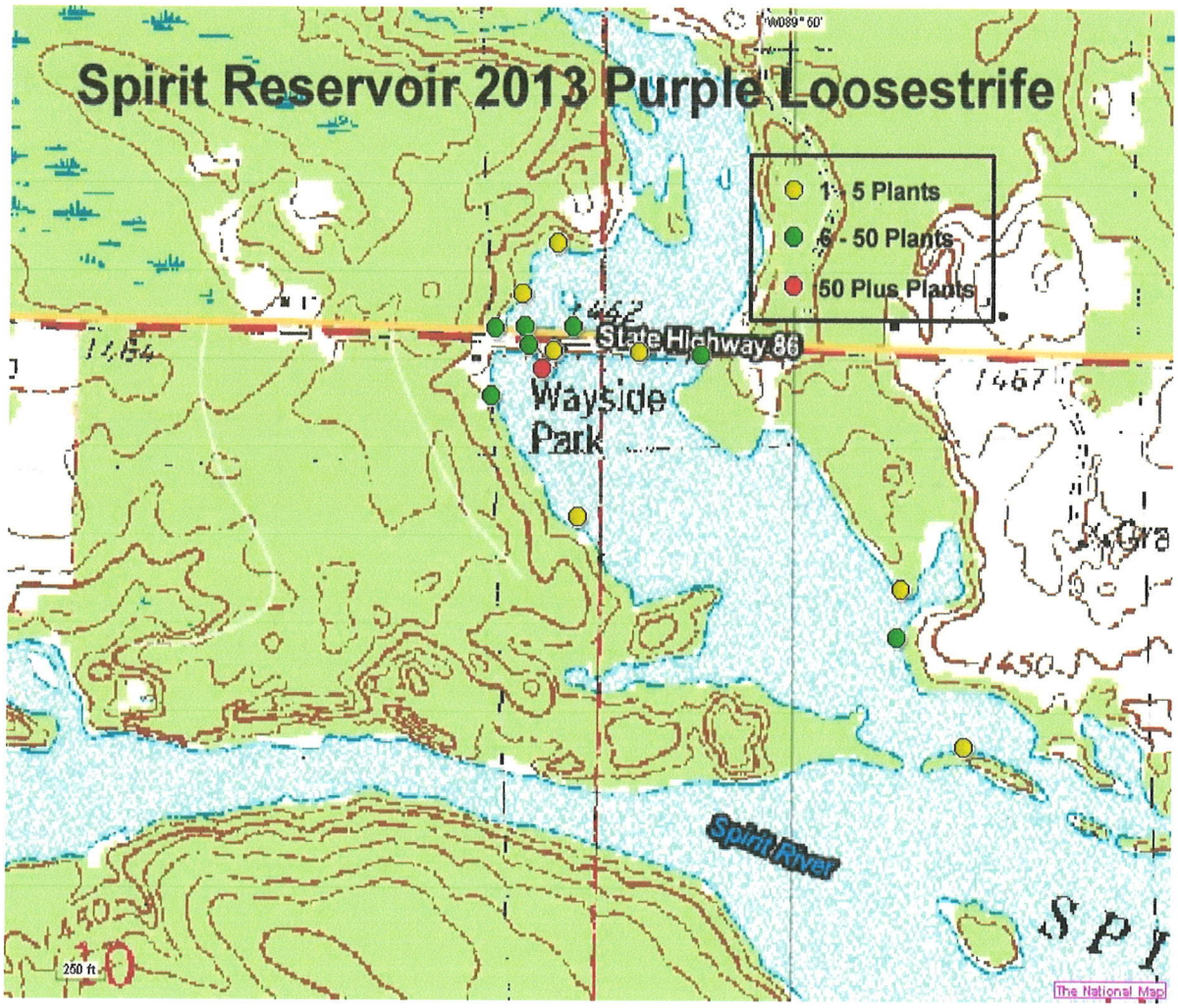


Table 3

Purple Loosestrife Survey - 2013

Spirit Reservoir

Number	Latitude		Longitude		Amount	Beetle Activity
1	45°	27.26322	89°	50.18289	1-5 plants	no
2	45°	27.26064	89°	50.10986	6-50 plants	no
3	45°	27.28127	89°	50.26853	6-50 plants	no
4	45°	27.28321	89°	50.31859	6-50 plants	no
5	45°	27.28170	89°	50.32042	1-5 plants	no
6	45°	27.28169	89°	50.35333	6-50 plants	no
7	45°	27.34596	89°	50.27999	1-5 plants	no
8	45°	27.08293	89°	49.87151	1-5 plants	no
9	45°	27.04673	89°	49.87619	6-50 plants	no
10	45°	26.96301	89°	49.79647	1-5 plants	no
11	45°	27.13819	89°	50.25518	1-5 plants	no
12	45°	27.22941	89°	50.35733	6-50 plants	no
13	45°	27.26886	89°	50.31394	6-50 plants	no
14	45°	27.26436	89°	50.28501	1-5 plants	no
15	45°	27.25004	89°	50.29881	50+ plants	no

Figure 4

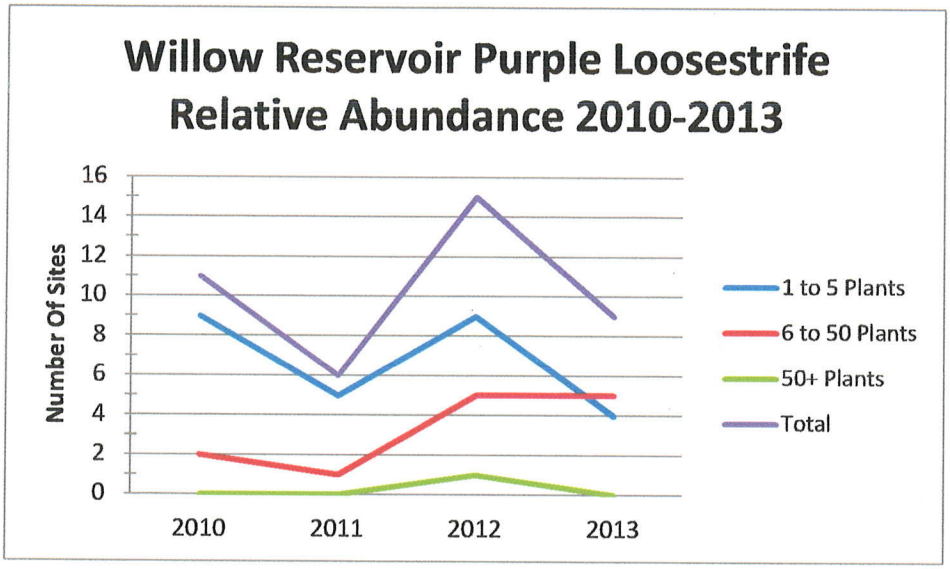


Figure 5

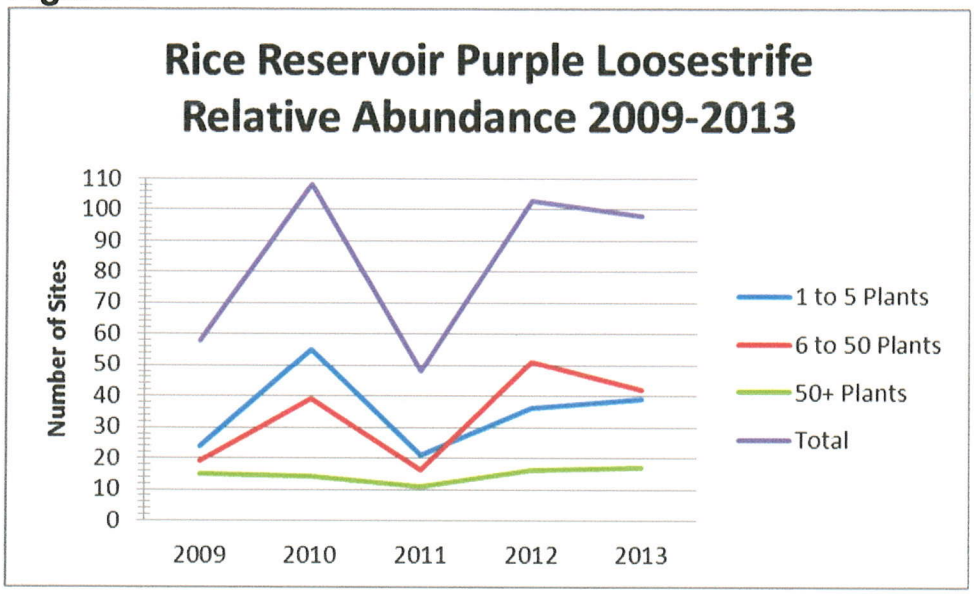


Figure 6

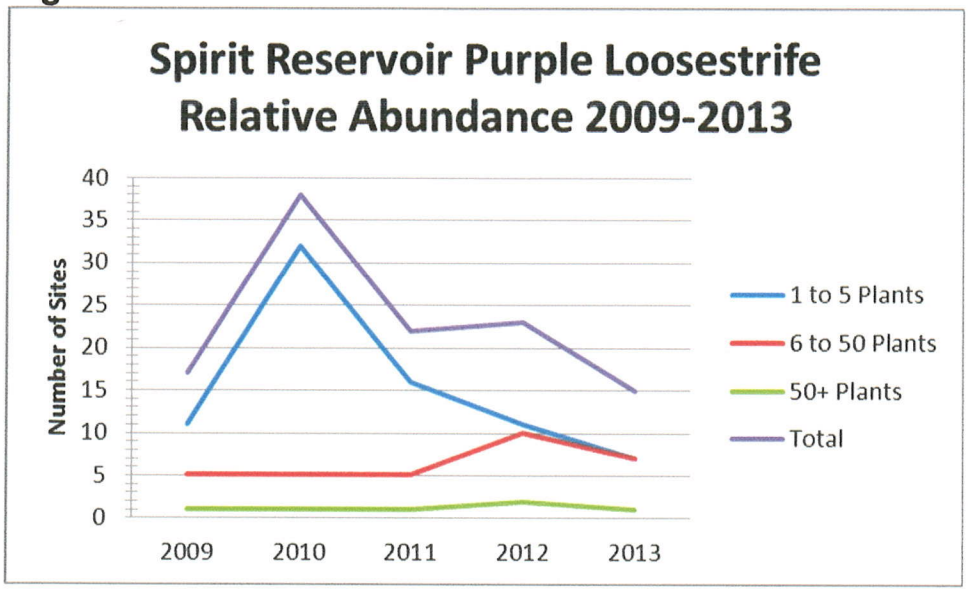


Figure 7

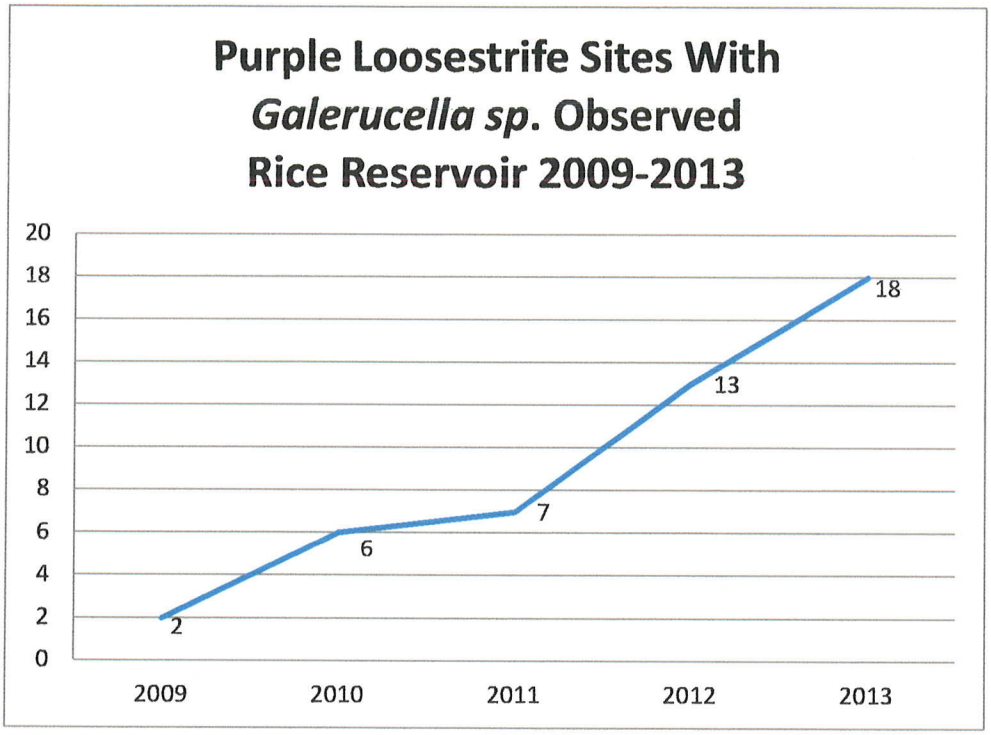
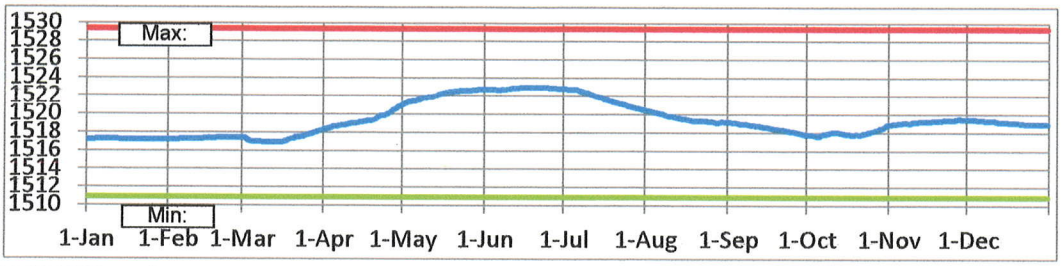
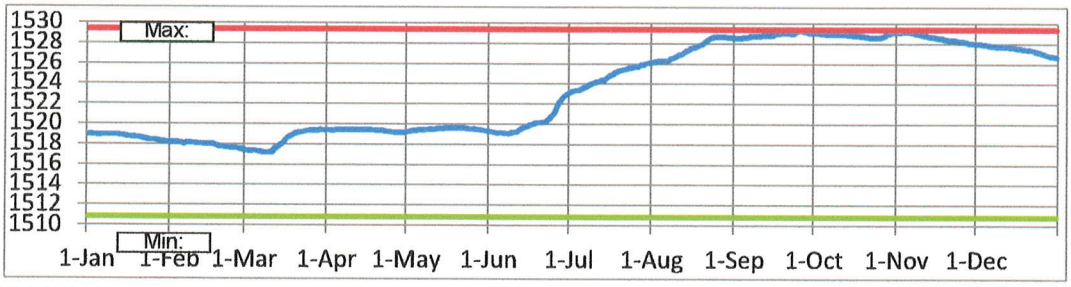


Figure 8.

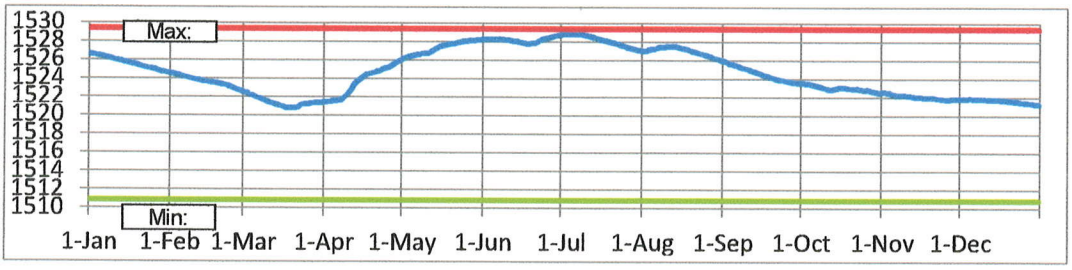
2009 Willow Reservoir



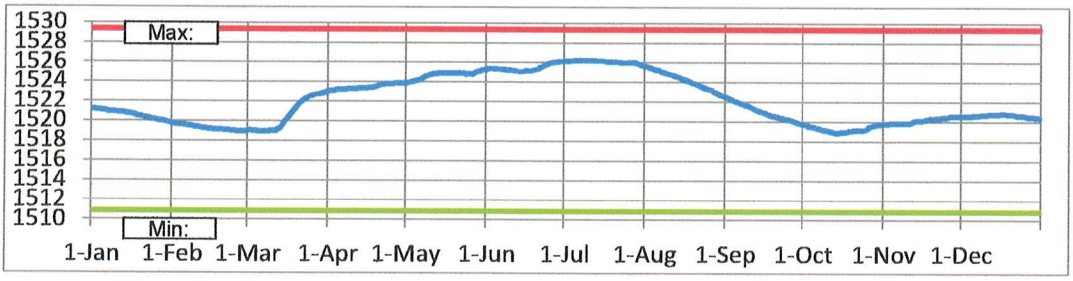
2010 Willow Reservoir



2011 Willow Reservoir



2012 Willow Reservoir



2013 Willow Reservoir

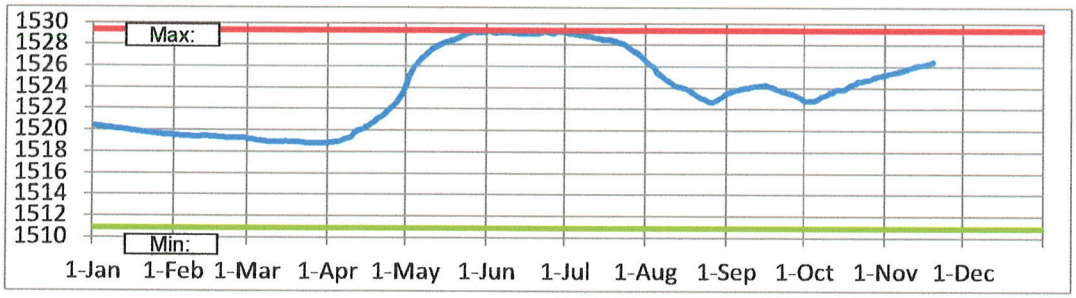
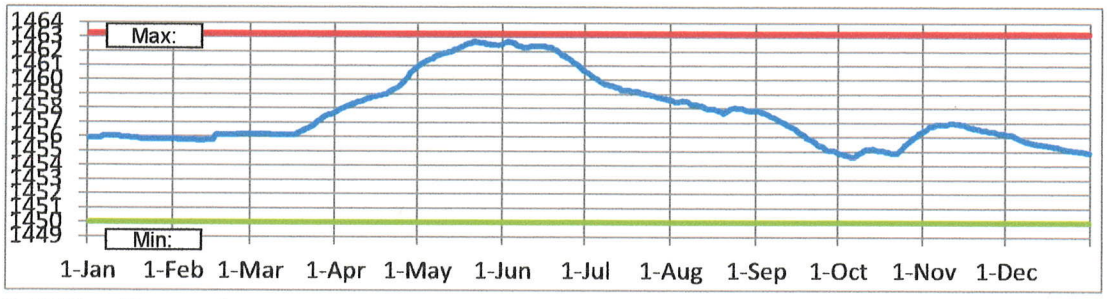


Figure 9.

2009 Rice Reservoir



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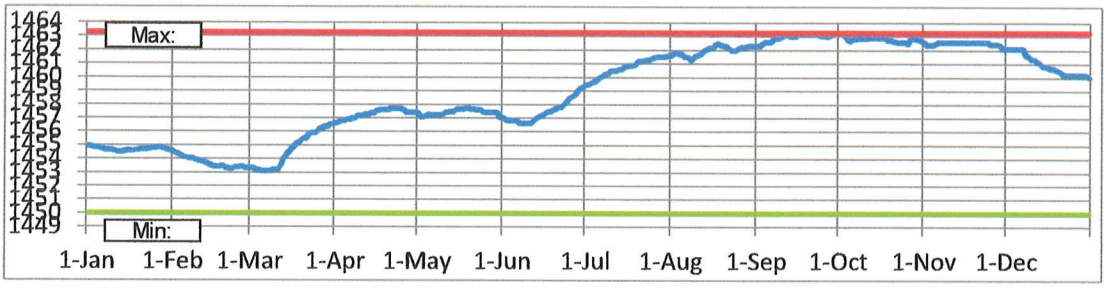
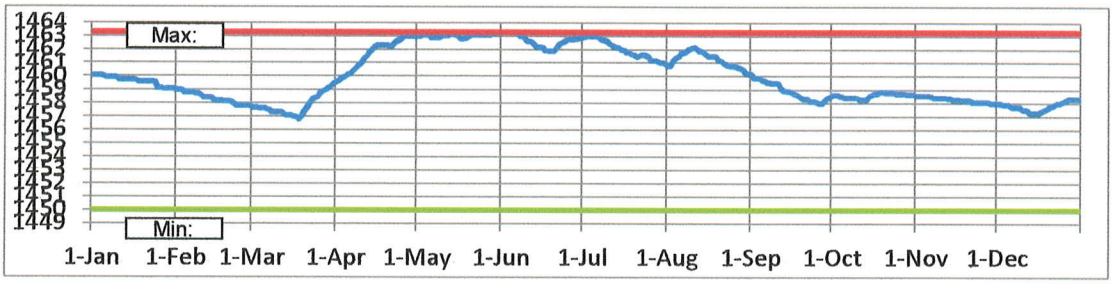
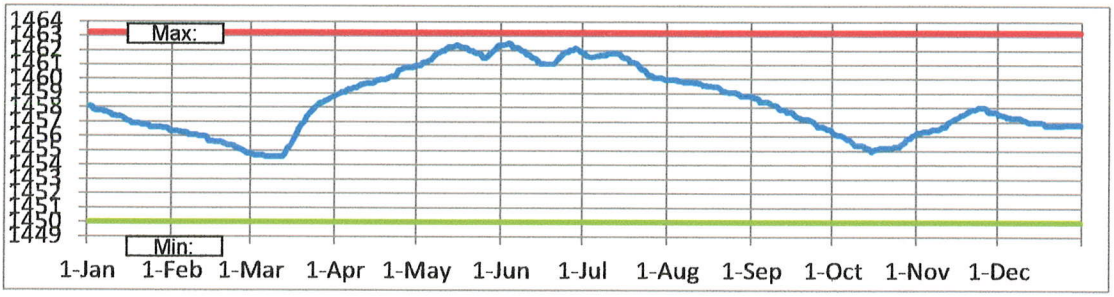


2011 Rice Reservoir



2012 Rice Reservoir



2013 Rice Reservoir

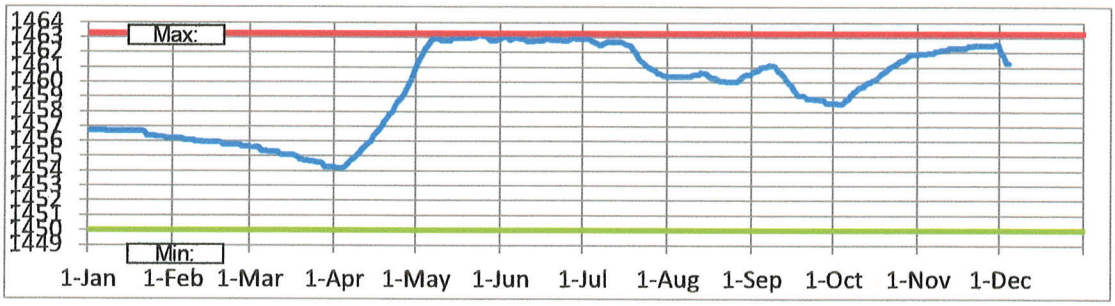
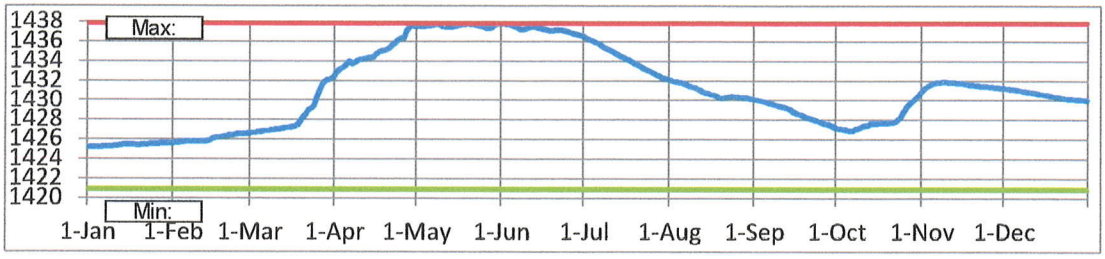
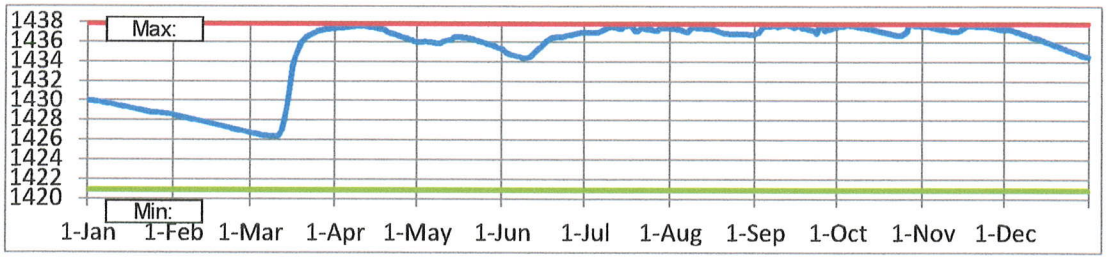


Figure 10.

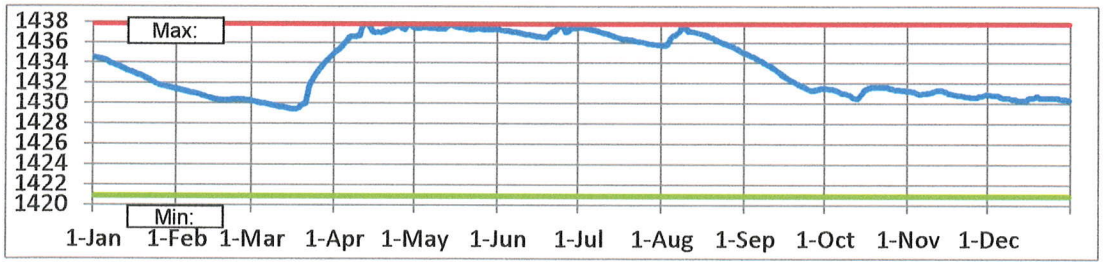
2009 Spirit Reservoir



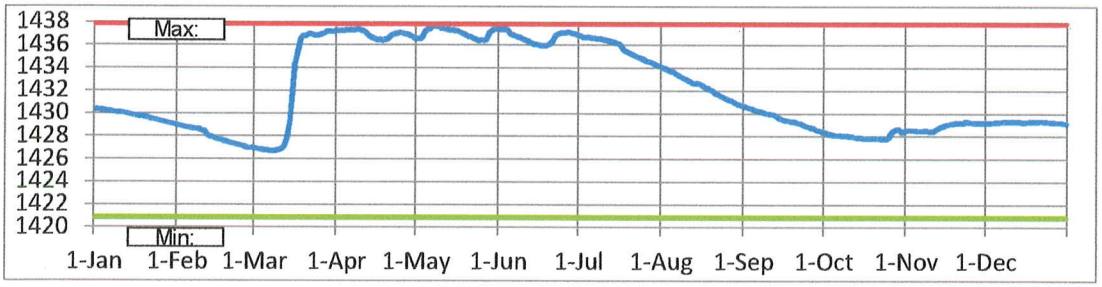
2010 Spirit Reservoir



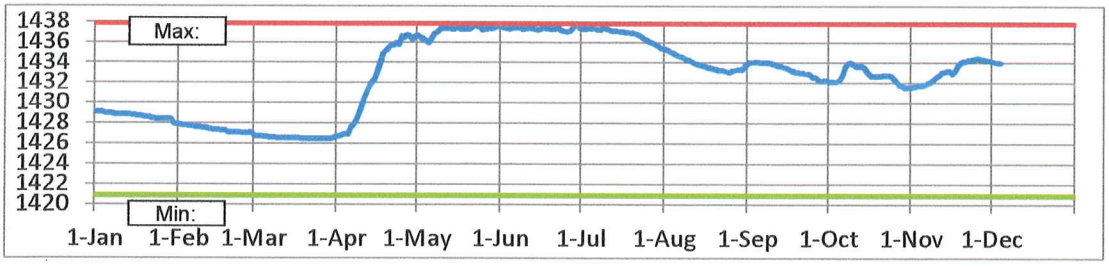
2011 Spirit Reservoir



2012 Spirit Reservoir



2013 Spirit Reservoir



Attachment 2

Consultation/Correspondence with Wisconsin DNR and USFWS

Summary of comments received from WIDNR on 12/3/2013 via email on the first draft PL Report and WVIC responses emailed 12/26/2013. Grammatical errors and suggestions have been left out of the comment and response summary and addressed as needed in the final report.

- Comment- Page 1, 2nd paragraph of Willow Reservoir, line 4: "declined to only three beds in 2013" (there are 4 beds on the shoreline in figure 1)
  Response- There are 3 beds on the shoreline and 1 bed (6-50 plants/green) on an island near shore. It is not easily depicted on the topographic map due to the age and scale of the maps. We could of used updated aerial photos which show the island during lower water elevations but wanted to remain consistent with the previous four reports.

- Comment- Page 2, 3rd paragraph of Rice Reservoir, line 5: "remaining eight beds with beetles" needs to be changed to 9 according to figure 2 and first sentence (18 loosestrife beds in 2013)-
  Response- Changed in final report.

- Comment- Page 5, Beetle monitoring, would this method also be looking for beetle eggs,
  Response-Timed beetle counts have been replaced with vegetative damage assessments as discussed in final report.

- Comment- Page 5, Beetle monitoring, may want to include that monitoring should only be completed on days without overcast or precipitation (because the beetles will hide from rain),
  Response- Timed beetle counts have been replaced with vegetative damage assessments as discussed in final report

- Comment-Overall they keep referring to a "historic range" and that PL was not found outside of this range. What are the boundaries of this range;
  Response- Historic range refers to the areas within the FERC Project Boundary where PL has historically been found since it was first discovered by WVIC personnel back in the late 1980's.

- Comment- are they looking at abutting or surrounding wetlands too?
  Response- Abutting and surrounding wetlands within the FERC Project Boundary are monitored. Areas outside of the FERC Project Boundary are not part of the monitoring program.

- Comment- Pages 2 and 5, is there a reference/source to this monitoring method? Does this method look for beetle damage too?, The method seems bias to the counter's ability to quickly id beetles and larvae, eyesight and point-of-view (e.g., larvae or beetles may be under the leaves or hidden from view resulting in a lower than actual density) Does the counter look at the plant from eye level? (i.e., kneel down to count) How does the number of beetles observed within 3 min. relate to overall beetle density or abundance within the stand?
  Response- Timed beetle counts have been replaced with vegetative damage assessments as discussed in final report.

- Comment- Page 3, last paragraph, 2nd sentence, How do you know a private landowner chemically treated; we didn't receive any reports of this?
  Response- WVIC staff encountered the landowner that was spraying in 2012 while conducting monitoring. The unauthorized spraying is referenced in our 2012 PL report.

- Comment- Page 4, last paragraph, 1st sentence. "continue bio-control management and monitoring…" Where is the management portion; it looks like monitoring is the only management? Beyond PL and beetle monitoring are there going to be any beetle rearing or PL hand-pulling efforts included in future scope, dependent upon PL or beetle abundance
- Response: A management section has been delineated in the final report. Biocontrol/beetles are the primary management method for PL in abundance categories of 6-50 plants and 50+ plants. Limited mechanical control is being proposed for new pioneer sites with 1-5 plants and includes either hand pulling or cutting inflorescences depending on site conditions and whether plants can successfully be uprooted.

- Comment- May want to include water level graph (max heights/elevations) to compare with PL abundance, since correlations are inferred throughout the report; ice-out dates could be useful too.
  Response-Water level graphs for all of the reservoirs from 2009-2013 have been included as figures in the final report. Ice out dates are not consistently recorded each year at all locations but may be in the future.

Ben Niffenegger

From: Laatsch, Cheryl - DNR <Cheryl.Laatsch@wisconsin.gov>
Sent: Saturday, December 28, 2013 4:19 PM
To: Plude, Timothy M - DNR; Ben Niffenegger; Gauthier Sr, Kevin J - DNR
Subject: RE: Purple Loosestrife Monitoring Report & Five-Year Summary and Proposed Monitoring; review comments

Nice work everyone!
Cheryl

From: Plude, Timothy M - DNR
Sent: Friday, December 27, 2013 9:01 AM
To: Ben Niffenegger; Gauthier Sr, Kevin J - DNR
Cc: Laatsch, Cheryl - DNR
Subject: RE: Purple Loosestrife Monitoring Report & Five-Year Summary and Proposed Monitoring; review comments

Ben,
Thanks for the updated report and I do not have any further comments. The PL vegetative damage monitoring plan sounds like a good way to gain extra information about the beetle populations and interactions. Have a Happy New Year.
-Tim

From: Ben Niffenegger [mailto:Ben@wvic.com]
Sent: Thursday, December 26, 2013 11:01 AM
To: Plude, Timothy M - DNR; Gauthier Sr, Kevin J - DNR
Cc: Laatsch, Cheryl - DNR
Subject: RE: Purple Loosestrife Monitoring Report & Five-Year Summary and Proposed Monitoring; review comments

Attached is a summary of Tim's original comments and WVIC responses along with the updated PL Monitoring Report & Five Year Summary and Proposed Monitoring Plan. After talking with Tim last week I believe I've addressed all of his comments and questions in the attachments. If there are any additional comments on the changes made, please respond via email or phone by 12/30 which is when I'll be sending the final report to FERC.

Thank You,

Ben Niffenegger
Environmental Specialist
Wisconsin Valley Improvement Company
2301 North Third Street
Wausau, WI 54403
715-848-2976 Ext. 304
Ben@wvic.com

From: Laatsch, Cheryl - DNR [mailto:Cheryl.Laatsch@wisconsin.gov]
Sent: Tuesday, December 03, 2013 10:39 AM
To: Ben Niffenegger
Subject: FW: Purple Loosestrife Monitoring Report & Five-Year Summary and Proposed Monitoring; review comments

Hi Ben – Here are Tims comments. Please let me know if you would like to discuss the comments. Also, we would like to work with you to have all the data entered into the statewide SWIMS database. Thanks

Cheryl Laatsch
Statewide FERC Coordinator
Wisconsin Dept of Natural Resources
N7725 Hwy 28
Horicon WI 53032
(T) 920-387-7869 (Fax) 920-387-7888
Cheryl.laatsch@wisconsin.gov

From: Plude, Timothy M - DNR
Sent: Tuesday, December 03, 2013 10:13 AM
To: Laatsch, Cheryl - DNR
Cc: Winter, Courtney L - DNR; Gauthier Sr, Kevin J - DNR; Plude, Timothy M - DNR
Subject: Purple Loosestrife Monitoring Report & Five-Year Summary and Proposed Monitoring; review comments

Hello Cheryl,
Here are our comments from a review of the WVIC Purple Loosestrife Monitoring Report and Five Year Summary:

- Page 1, 2nd paragraph of Willow Reservoir, line 4: "declined to only three beds in 2013" (there are 4 beds on the shoreline in figure 1)

- Page 2, 3rd paragraph of Rice Reservoir, line 5: "remaining eight beds with beetles" needs to be changed to 9 according to figure 2 and first sentence (18 loosestrife beds in 2013)

- Page 4, 2nd paragraph of Five Year Summary, line 4: "Growing conditions like temperature, precipitation, and wind **during at** varying times"
- Page 5, Beetle monitoring, would this method also be looking for beetle eggs?
- Page 5, Beetle monitoring, may want to include that monitoring should only be completed on days without overcast or precipitation (because the beetles will hide from rain)
- Page 1, I'm not sure if referring to purple loosestrife as loosestrife throughout the repot is proper (PL would be preferred)
- Overall they keep referring to a "historic range" and that PL was not found outside of this range. What are the boundaries of this range; are they looking at abutting or surrounding wetlands too?
- Pages 2 and 5, is there a reference/source to this monitoring method? Does this method look for beetle damage too? The method seems bias to the counter's ability to quickly id beetles and larvae, eyesight and point-of-view (e.g., larvae or beetles may be under the leaves or hidden from view resulting in a lower than actual density) Does the counter look at the plant from eye level? (i.e., kneel down to count) How does the number of beetles observed within 3 min. relate to overall beetle density or abundance within the stand?
- Page 3, last paragraph, 2nd sentence, How do you know a private landowner chemically treated; we didn't receive any reports of this?
- Page 3, last paragraph, 2nd to last sentence. "No beetles The lack of beetles..." fix sentence
- Page 4, last paragraph, 1st sentence. "continue bio-control management and monitoring..." Where is the management portion; it looks like monitoring is the only management? Beyond PL and beetle monitoring are there going to be any beetle rearing or PL hand-pulling efforts included in future scope, dependent upon PL or beetle abundance?
- Page 5, last par. 2nd sentence, "and gps locationsof...." GPS capitalized for consistency and space between location and of
- May want to include water level graph (max heights/elevations) to compare with PL abundance, since correlations are inferred throughout the report; ice-out dates could be useful too

Please let us know if you need anything else.

Tim Plude

Water Resources Mgmt. Specialist
Dept. of Natural Resources
107 Sutliff Ave.
Rhinelander, WI 54501
(☎) phone: (715) 365-8905
(✉) fax: (715) 365-8932
(📧) e-mail: timothy.plude@wisconsin.gov

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Water Division Customer Service Survey
https://www.surveymonkey.com/s/WDNRWater

Ben Niffenegger

From: Utrup, Nick <nick_utrup@fws.gov>
Sent: Thursday, December 26, 2013 11:31 AM
To: Ben Niffenegger
Subject: Re: FW: Purple Loosestrife Monitoring Report & Five-Year Summary and Proposed Monitoring; review comments

Hi Ben,

I will not be providing comments but thanks for providing the report and giving me the opportunity to comment.

Thanks,

Nick

Nicholas J. Utrup
U.S. Fish and Wildlife Service
Wisconsin/Minnesota Ecological Services Field Office
4101 American Boulevard East
Bloomington, MN 55425

Office: 612-725-3548 Ext. 2204
Cell: 920-530-9937
FAX: 612-725-3609
Email: Nick_Utrup@fws.gov

On Thu, Dec 26, 2013 at 11:27 AM, Ben Niffenegger <Ben@wvic.com> wrote:

Hello Nick,

I am not sure if you were going to comment on the Purple Loosestrife report but wanted to provide you with the latest version. The primary differences between the first draft you received and this updated version are:

We removed the timed beetle counts from the proposal and replaced it with a vegetative damage assessment. After discussions with numerous people familiar with *Galerucella sp.* beetles, it was noted that weather conditions sun/shade wind/rain etc., can greatly influence whether beetles are actively feeding and visible on any given day. As a result, the beetle counts wouldn't necessarily be a reliable method to use for population comparisons from year to year. Vegetative damage assessments will give us an idea of how much feeding activity is occurring at a site, and what level of leaf tissue is removed an average per plant. Other notable addition is we also proposed limited mechanical removal of new pioneer sites of 1-5 plants. Plants will either be hand pulled or inflorescences cut depending on site conditions.

If you do have any comments or questions please give me a call or email by 12/30. I'll be sending the final report in to FERC 12/31.

Thank you,

Ben Niffenegger

Environmental Specialist

Wisconsin Valley Improvement Company

2301 North Third Street

Wausau, WI 54403

715-848-2976 Ext. 304

Ben@wvic.com

From: Ben Niffenegger
Sent: Thursday, December 26, 2013 11:01 AM
To: Plude, Timothy M - DNR (Timothy.Plude@wisconsin.gov); Gauthier Sr, Kevin J - DNR (Kevin.GauthierSr@wisconsin.gov)
Cc: Laatsch, Cheryl - DNR
Subject: RE: Purple Loosestrife Monitoring Report & Five-Year Summary and Proposed Monitoring; review comments

Attached is a summary of Tim's original comments and WVIC responses along with the updated PL Monitoring Report & Five Year Summary and Proposed Monitoring Plan. After talking with Tim last week I believe I've addressed all of his comments and questions in the attachments. If there are any additional comments on the changes made, please respond via email or phone by 12/30 which is when I'll be sending the final report to FERC.

Thank You,

Ben Niffenegger

From: Ben Niffenegger
Sent: Wednesday, November 27, 2013 2:52 PM
To: 'Cheryl Laatsch'; "Kevin Gauthier'; Nick_Utrup@fws.gov
Cc: Cathy Wendt (Wendt@wvic.com)
Subject: Purple Loosestrife Monitoring Report & Five-Year Summary and Proposed Monitoring Plan
Attachments: 2013 Annual Purple Loosestrife Report & Five Year Summary and Proposed Monitoring Plan.pdf

Good Afternoon Cheryl, Kevin and Nick:

In compliance with the FERC Order Amending WVIC's Purple Loosestrife Control Plan dated June 16, 2009, I am submitting WVIC's Purple Loosestrife Annual Monitoring Report – 2013 & Five-Year Summary and Proposed Purple Loosestrife Monitoring Plan for your review and comment. Both the monitoring results from this year as well as the five-year summary and proposed future monitoring plan are contained within the report.

Please provide any comments to my attention via email or at the mailing address below by December 27, 2013.

Happy Thanksgiving,

Ben

Ben Niffenegger
Environmental Specialist
Wisconsin Valley Improvement Company
2301 North Third Street
Wausau, WI 54403
715-848-2976 Ext. 304
Ben@wvic.com

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