

INTRODUCTION

Herbicide treatments of Eurasian water milfoil (EWM) and curly-leaf pondweed (CLP) were completed on Little Saint Germain Lake during May 2009. This report discusses the methods used to evaluate the treatment and the criteria used to determine if it was successful beginning with the summer 2008 survey (summer pretreatment) completed during August 2008. The report goes on to discuss the condition of the EWM in the treatment areas in the spring before the 2009 treatment (spring pretreatment) and then in August 2009 (summer post treatment) following the herbicide application. Similar to past years, the peak biomass survey was completed in August 2009 to gather information used in creating the 2010 proposed treatment areas, which are discussed near the end of the report. Once agreed upon by the Little Saint Germain Lake Protection and Rehabilitation District (LSGPRD) and the Wisconsin Department of Natural Resources (WDNR), the proposed treatment areas will be used to obtain a conditional treatment permit for the May 2010 treatment.

TREATMENT MONITORING

Determining the success or failure of chemical treatments on AIS is often a difficult task because the criteria used in determining success or failure is ambiguous. Most people involved with AIS management, whether professionals or laypersons, understand that the eradication of AIS from a lake, or even a specific area of a lake, is nearly, if not totally, impossible. Most understand that achieving control is the best criteria for success. Two different methods of evaluation were used to understand the level of control that was achieved by the chemical treatment. A qualitative assessment was determined for each treatment site by collecting spatial data with a sub-meter Global Positioning System (GPS), in addition to, comparing detailed notes from the pre- and post treatment observations.

Previous to the 2005 field season, the LSGPRD received a WDNR Aquatic Invasive Species (AIS) grant to aid in the control of EWM and CLP within the lake. After the grant was awarded, Onterra was contracted to monitor and coordinate the treatments. The project was initially set up by conducting a point-intercept survey of the entire lake in early May. The point-intercept survey was intended to provide a systematic method to search the entire lake for AIS. However it became apparent that this method is too *coarse scale* to provide the information for which it was intended. After discussions with the LSGPRD, it was agreed that the time used to complete these surveys may be better appropriated to bring the project more in line with recently devised protocols.

Starting in May 2008, quantitative monitoring of the treatments were completed following protocols disbursed by the Wisconsin Department of Natural Resources (WDNR) in April 2007. This protocol calls for the monitoring of target plants (EWM and CLP) and native plants before and after treatments. The methodology is specifically designed for EWM treatments and includes pretreatment surveys being completed the summer before treatment and the spring of the treatment. Post treatment surveys are completed the summer following treatment and in some case, carried out for multiple summers after the treatment.

The monitoring of CLP treatments differs slightly, as quantitative sampling would be conducted the spring previous to the treatment (pretreatment) and the spring following the treatment (post

treatment). Because of CLP's life cycle, a post treatment survey a few weeks following the treatment would not differentiate if a reduction in CLP occurrence could be attributed to the herbicide application or the natural die-off of the species. For this reason, the 2009 CLP treatment will not be discussed in terms of treatment effectiveness, as the post treatment data will not be collected until the spring of 2010. However, the 2008 CLP treatment will be discussed as quantitative data is available between spring 2008 (pretreatment) and spring 2009 (post treatment). Cost coverage for the spring 2008 CLP pretreatment survey is included in the 2005 AIS grant and the 2009 CLP post treatment survey within the February 2009 AIS grant.

During the February 2009 WDNR grant cycle, the LSGPRD received partial funding for a four-year AIS Control and Prevention Project aimed at reducing EWM and CLP within the lake. During the following grant cycle (August 2009), the LSGPRD secured the remaining funds needed to carry-out the multi-year project. The four-year project covers the 2009-2012 treatments of EWM and CLP. As stated above, the 2008 CLP treatment will also be evaluated within this report.

Quantitative data was collected during the summer of 2008 on Little Saint Germain Lake, but with the uncertainty of grant funds, point-intercept collections were aimed solely at monitoring the 2008 treatment areas. Only 41 of those locations are useable to evaluate the 2009 treatment (Table 2) as there was not much overlap in sites treated in 2008 and 2009. In total, 187 sub-sample locations were visited in August 2009 to serve as the 2010 pretreatment survey for EWM. At all locations, EWM presence and rake fullness were documented as well as water depth and substrate type. Native plant abundances were also determined at each plot during those surveys.

As outlined within the August 2009 AIS Established Population Control Grant application, the treatments within the four-year project would be monitored through the combined efforts of professionals and volunteers. A group of volunteers would work to monitor the lake for existing and new aquatic invasive species, while professional staff from Onterra would complete surveys to determine prospective treatment areas and complete quantitative sampling. Volunteers would scout Little Saint Germain Lake in late July or early August in search of EWM to supplement and enhance surveys completed by Onterra staff during August. The results of the surveys would be used to create the prospective treatment areas for the following year.

Statistical Analysis of Pre- and Post Treatment Survey Data

Scientists often rely on the use of statistical analysis to understand whether the observed differences in nature are merely a product of chance or can be attributed to a particular factor. In the case of the pre- and post treatment monitoring surveys completed on Little Saint Germain Lake, the particular factor we are concerned with is the herbicide treatment. The desired result is a decrease in AIS within the treatment areas. The amount of AIS within a treatment site is measured with the sub-sampling surveys and expressed in terms of percent frequency of occurrence. AIS frequency is the percentage of sub-sampling sites that contain AIS relative to the total sub-sampling sites. For example if a treatment site has 20 sub-sampling locations and 5 of those locations contained EWM, then the EWM frequency would be 25%.

As a part of the treatment monitoring, the sub-sampling sites are visited before and after the treatments to produce the pre- and post treatment data. By comparing those data, we can see if

there is more, less, or the same amount of AIS before and after the treatment. As mentioned above, the desired result is to have less AIS after treatment. If there is a difference between the pre- and post treatment data, statistical analysis is used to determine if the difference is sufficient to be attributed to the treatment or if the difference may have occurred randomly. If the difference is sufficient, it is considered to be *significantly different*, if it is not sufficient, it is considered to be *insignificantly different*. In the end, a significant difference can be attributed to some factor, while an insignificant difference can only be attributed to random chance.

With guidance from WDNR Integrated Sciences, a Chi-square distribution analysis ($\alpha = 0.05$) was used to determine if the quantitative data collected before the treatment are statically different from the data collected after the treatment. The alpha value is set such that we consider the results statistically significant when the test is 95% confident that the results are truly different and non-random.

The number of sub-sample sites within a treatment area must be considered when evaluating the treatment impacts on that particular site. A higher sample size (N), leads to more credible results and conclusions. In general, sites containing less than 6 sub-sample locations are not considered sufficient for analysis; however, those data are considered valuable when pooled (combined) with the other sub-sample sites within the lake for the lake-wide analysis. A 20-meter spacing (resolution) between sub-sample locations is considered the closest that hand-held GPS technology can effectively allow. Additionally, as mentioned above, only those sites that were sampled in both 2008 and 2009 were used in the analysis.

The caveat to all of this is that we assume that the differences observed were caused by the herbicide treatment, but truly, without having comparable data from a non-treatment site (control group), this cannot be absolutely certain. For example, was the reduction in EWM caused by inter-annual variations caused by competitive dynamics between species, fluctuating water levels, natural plant cycles, or changes due to climatic conditions? Without a true experimental design that uses a control site (the monitoring of an area that was not treated) we cannot absolutely answer that question. In the end, it is impractical to take the risk of not treating a colony of AIS within a lake just to make sure that the results of the studies are scientifically sound; therefore making the educated-assumption that the difference is caused by the herbicide treatment is reasonable.

Pretreatment Survey – 05/08/09 and 05/11/09

One aspect of this survey was to refine the treatment areas used in the conditional permit to more accurately and effectively coordinate the control effort. These areas were accepted by the LSGPRD and the WDNR, and considered the *final* treatment areas. These data were then provided to the herbicide applicator.

During this survey, quantitative data were also collected to understand the efficacy of the CLP treatment. The data collected would serve as a post treatment survey to evaluate the previous year's treatment in addition to serving as a pretreatment survey for the upcoming treatment

The weather conditions on the first day of the survey were sunny with light wind. The second day was partly cloudy and windy. Viewing the EWM on Little Saint Germain Lake from the surface was relatively effortless because of the clarity of the water at this time of the year. An aqua scope and submersible video camera were used to aid in the survey. The ambient air temperature was 48°F and 65°F, respectively. The surface water temperature was approximately 52°F and 57°F, respectively.

Curly-leaf Pondweed

In 2008, 55.5 acres were treated with Aquathol-K at 1.5 ppm to control CLP. These areas served as the proposed 2009 treatment areas for which a conditional herbicide application permit was submitted. During the surveys, a submersible camera was used almost exclusively to locate CLP as it was quite early in the plant's growth at that time of year.

For the most part, CLP density was observed to significantly less within all of the sites – especially in Site A. CLP sites G and H were removed as almost no plants were observed within the proposed treatment areas after being transected numerous times using submersed video and rake tows (Map 1). In total, 46.4 acres were treated to control CLP in 2009.

Eurasian Water Milfoil

A conditional permit containing 32.2 acres was created for the 2009 treatment (Map 2). As stated above, the project was designed to have professionals monitor the treatments and refine the mapping of new occurrences based on data collected by LSGPRD volunteers. Along with reducing the costs associated with hiring professionals, these activities instill ownership within the project and a better understanding of how well the treatments are working.

The 2009 treatment areas were created after revisiting the 2008 treatment sites and the GPS locations marked by volunteer LSGPRD members. After the conditional permit was created, additional EWM occurrences were found by district members. Since the conditional permit was already submitted, it was determined not to revised the conditional permit, but simply integrated the additional areas into the *focus areas* that would be visited by Onterra staff during the 2009 spring pretreatment survey.

After the spring survey, the acreage of EWM warranting treatment increased approximately 8 acres to 40.2 acres (Map1) Two conditional treatment sites in East Bay, totaling about one acre, were removed because little to no EWM was observed. The district decided to take an aggressive approach and treat all the areas that warranted treatment.

Post Treatment & Peak biomass EWM Survey – 09/02/09

During this survey, all EWM treatment areas were visited to determine the efficacy of the chemical application. The conditions were mostly sunny with a slight breeze. At this time of year the EWM is at peak growth and the plants have nearly reached the surface, making viewing the plant optimal. All point-intercept sample locations were revisited and data were collected in the same manner as during the pretreatment survey. Native plant occurrences were also

documented at the sub-sample locations during this survey for comparison with past and future summer surveys.

As outlined within the Little Saint Germain Comprehensive Plant Management Plan (Draft), success of the herbicide treatments would be evaluated in multiple ways. Qualitatively, a successful treatment on a particular site would include a reduction of EWM density as demonstrated by a decrease in density rating (e.g. highly dominant to dominant). In terms of a treatment as a whole, at least 75% of the acreage treated that year would decrease by one level of density as described above for an individual site.

Quantitatively, a successful treatment on a specific site would include a significant reduction in EWM frequency following the treatments as exhibited by at least a 50% decrease in EWM frequency based upon the sub-sampling. In other words, if the EWM frequency of occurrence before the treatment was 80%, the post treatment frequency would need to be 40% or lower for the treatment to be considered a success for that particular site. Evaluation of the treatment-wide effectiveness would follow the same criteria based upon pooled sub-sample data from all treatment sites. Further, there would be a noticeable decrease in rake fullness ratings within the fullness categories of 2 and 3. Preferably, there would be no rake tows exhibiting a fullness of 2 or 3 during the post treatment surveys.

During this field survey, a peak biomass EWM survey was conducted to provide an accurate account of all EWM locations within the lake to aid in coordinating the 2009 management actions. These recommendations are provided within this section.

South Bay

Site D-09 There was no EWM found within the southern portion of this treatment area which before the treatment contained a highly dominant EWM colony and a scattered EWM area (Maps 2 and 3). Additionally, the northern part of the treatment area that was dominant before the treatment is now reduced to a scattered density, but the colony expanded in size since the 2008 peak biomass survey (Maps 2 and 3). This small scattered colony is recommended for treatment in 2010 (Map 4, D-10).

Sites G-09, H-09, and I-09 Before the treatment, the bay that contained these treatment sites contained a few scattered EWM colonies. Only a few single EWM plants were found within this bay after the treatment (Map 3). For the most part, the remaining EWM was located at the margins or just outside of the 2009 treatment areas. At this time, there is not enough EWM found to warrant repeat treatment in these areas during 2010.

Site Y-09 In the spring of 2009, this site, was added to the treatment permit because several clumps of EWM were found during the pretreatment survey (Map 2). After the treatment, little to no EWM was observed within most of the site, except for a small scattered colony at the extreme northern part of the site (Map 3). The new colony is proposed for treatment in 2010 (Map 4, F-10).

West Bay

Site J-09 Little to no treatment affect was observed within this site. The density of EWM has remained largely the same from last year, but has spread to the south of this site along the shore (Maps 2 and 3). This site is recommended for treatment in 2010 including the southern expansion (Map 4, H-10).

Sites K-09 and L-09 The treatments had little or no affect on the EWM within either of these sites. The density remained the same and the EWM colonies in between K-09 and L-09 have coalesced into one large colony, in addition to EWM spreading to the south of L-09 (Maps 2 and 3). This area of scattered and dominant EWM is recommended for treatment in 2010 (Map 4, I-10).

Sites M-09 Only a few single EWM plants remained after the treatment within an area that contained dominant and highly dominant EWM during August 2008 (Maps 2 and 3). This site is not recommended for treatment in 2010 but will remain a focus area as EWM occurrences encroaching from the northeast may form a single colony warranting treatment

Site N-09 A decrease in EWM density was observed within the near shore portions of this treatment site where it was found to be dominant in 2008 (Maps 2 and 3). After the treatment most of N-09 was found to contain scattered EWM occurrences (Map 3). Additionally, there was a highly scattered colony with an area of dominant EWM found along the north shore of this bay to the east of N-09 (Map 3). Site N-09 and this new found colony are proposed to be treated as a single site in 2010 (Map 4, J-09)

Sites O-09, P-09, and R-09 Numerous scattered and dominant areas of EWM span along the shoreline between Site O-09 and R-09. Overall the 2009 treatments successfully impacted the density of EWM within these sites. Again the EWM in this area will be targeted by three treatment sites (Map 4: K-10, L-10, and M-10). Particular attention will be paid in this area during the spring 2010 pretreatment survey as it may be more appropriate to treat the entire area as a single site if EWM expansion continues.

Site S-09 The treatment had little effect on the EWM within this site. In 2008, there were three separate colonies delineated in front of main public access location for the lake. During the August post treatment survey, it was found that EWM growth had *filled in* the areas between the colonies (Map 3). This site is proposed to be retreated in 2010 (Map 4 M-10).

Site U-09 EWM decreased one density rating from scattered to highly scattered after the treatment (Maps 2 and 3). EWM expanded slightly from August 2008 toward the shore (Map 3). This site is proposed for treatment again in 2010 including the shoreward expansion (Map 4, O-10).

East Bay

Site V-09 The EWM at this site was impacted, but only slight reductions in density were observed (Maps 2 and 3). This area is proposed to be retreated to further impact the EWM within this area (Map 4, Site P-10)

Sites W-09 and X-09 No EWM was observed within these sites after the treatment and neither is recommended for treatment in 2010 (Map 3 and Map 4).

Site A-09 The size of the EWM colony was reduced from 3.7 acres to 0.9 acres after the treatment (Maps 2 and 3). Although the size of the colony has been reduced, the density remains scattered and is recommended for treatment next year (Map 4, A-10).

Site Z-09 Several plants were observed at this site before the treatment during the spring of 2009 and no plants found following the treatment (Maps 2 and 3). Site Z-09 is not recommended for treatment in 2010.

CONCLUSIONS AND RECOMMENDATIONS

Curly-leaf Pondweed

After the pretreatment survey, approximately 9 acres were removed from the proposed treatment areas. This marked the first occasion since professional involvement began where CLP treatment acreage was reduced. A cursory look at this data may indicate that the CLP treatments on Little Saint Germain Lake are not successful since there has been an increase in the amount of CLP treated each year since 2006. Because CLP primarily spreads from asexual reproductive structures called turions which can last in the sediment for a number of years, a continued commitment to this management strategy will be needed to reduce the turion base.

In 2008, many of these areas have would be treated for their second or third time, likely approaching the point when the depletion of the turion base can be detected, as manifested by the decrease in the number of plants that sprout each spring from this reproductive structure. The reduction in acreage requiring treatment in 2009 likely indicates this phenomenon.

Table 1 displays the quantitative data monitoring the 2008 herbicide treatment. Before the 2008 treatment, 14 of the 185 sub-sample locations contained CLP and 18 contained CLP during the spring following the treatment. Because the CLP infestation in Little Saint Germain is sparse, significant differences are impossible to detect. Actually, except for CLP C, none of the results including the treatment-wide results are statistically significant and difference could be a result of random variation.

Table 1. CLP occurrence in point-intercept locations displayed by treatment site.

Site	Sample Locations(N)	2008 CLP Occurrence	2009 CLP Occurrence
CLP A	16	0	0
CLP B	72	8	7
CLP C	20	0	5
CLP D	24	1	2
CLP E	21	5	3
CLP F	2	0	0
CLP G	11	0	1
CLP H	19	0	0
Total	185	14	18

While great strides are being made on the known occurrences of CLP, it is important that LSGPRD volunteers scour the lake in early to mid June of each year to mark new CLP occurrences. These locations would be transferred to Onterra for inclusion within the following year’s focus areas to be visited during the spring pretreatment survey.

Eurasian Water Milfoil

Before the treatment on Little Saint Germain Lake, 15.6% of the point-intercept locations contained EWM and 13.3% contained EWM after the treatment, indicating an insignificant 14.7% $((13.3 - 15.6) / 15.6 \times 100\%)$ reduction in EWM occurrence. However, this quantitative data is based on only 5 of the 20 sites treated in 2009 (Table 2) and it cannot be assumed these results reflect the lake-wide treatment effects. Each of the sites that contained more than six point-intercept subsample locations were analyzed separately, but none of the sites were statistically significant. In other words it cannot be said for certain if a change in EWM occurrence is due to the treatment or if the difference may have occurred randomly.

Table 2. EWM occurrence in point-intercept locations displayed by treatment site.

Site	Sample Locations (N)	2008 EWM Occurrence	2009 EWM Occurrence
A-09	9	1	1
H-09	12	0	0
P-09	6	1	2
U-09	12	4	2
Y-09	2	1	1
Total	41	7	6

A rake fullness rating of 1-3 was used to determine abundance of EWM at each location. Figure 1 displays the number of point-intercept locations exhibiting each of the rake fullness ratings within the fore-noted treatment areas on Little Saint Germain Lake. The figure shows that there was little change comparing the rake fullness ratings between 2008 and 2009.

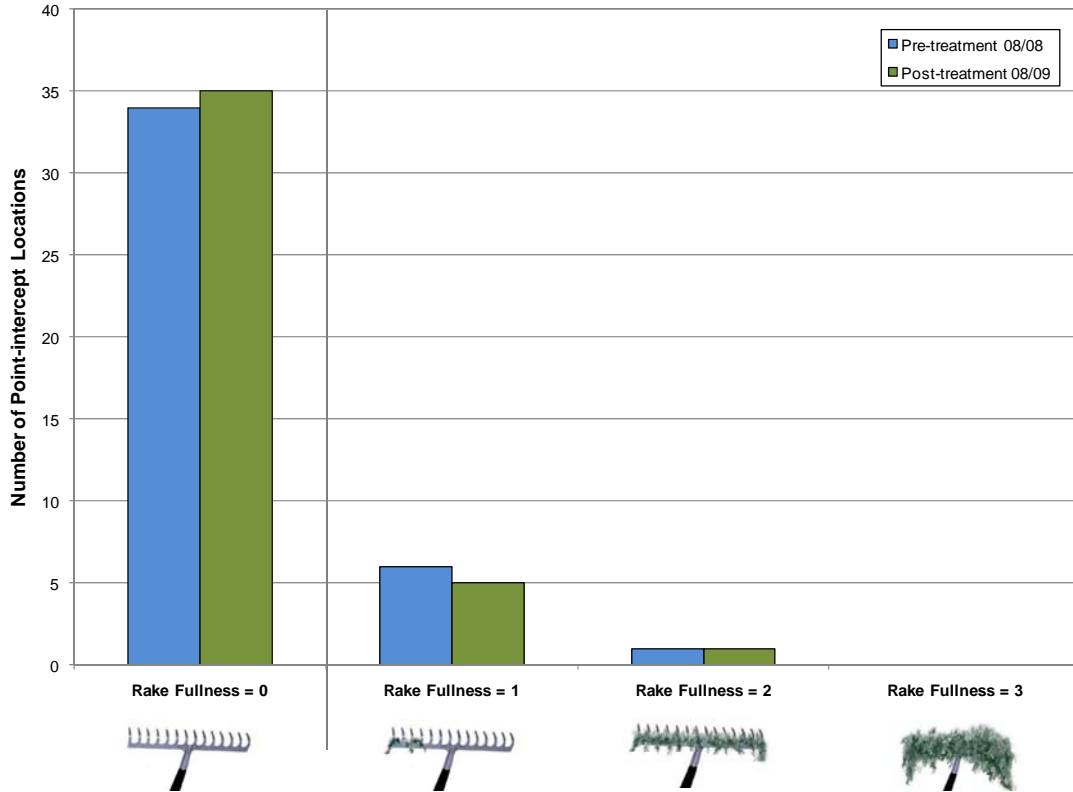


Figure 1. EWM rake fullness distribution within treated areas on Little Saint Germain Lake.

Native Plants

Although it is never the intent of the treatments to impact native species, it is important to remember that these non-target impacts can only be considered in the context of the areas treated and not on a *lake-wide* basis. In other words, the impact of the treatments on a non-target species in the treatment areas cannot be extrapolated to the entire population of that plant within the lake, unless the plant species is only found in locations where there is EWM. The same cannot be said for EWM, because by targeting nearly all EWM within the lake, it is intentionally being impacted on a lake-wide basis. One may claim that an impact to non-target natives may leave a ‘hole’ where pioneer infestations of EWM can take hold. The herbicide used in 2009 (2,4-D) is broad-leaf (dicot) specific and as long as a particular treatment site is not dominated by broad-leaf natives, native monocots, of which most aquatic plants are, will provide ample competition to compete against the non-native threat.

Native plant frequencies were monitored on Little Saint Germain Lake within the treatment sites listed in Table 2 during the 2008 summer pretreatment survey and the 2009 summer post treatment survey (Figure 2). Please note that Figure 2 is displaying the difference between frequency of occurrence determined during the summer of 2008 and the summer of 2009 for each native plant listed and not a percent change in frequency. For example, coontail occurred in approximately 91.1% of the plots during the summer of 2008 and 62.2% during the summer of 2009. Therefore, the chart indicates a negative difference (decrease) of approximately

28.9(62.2% – 91.1%) and not a percent change. If percent change was calculated, we would see in this example that coontail decreased by 31.7% $((62.2 - 91.1) / 91.1 \times 100\%)$.

Four plants were found to have a statistically significant decline within the five treatment areas where data is available (Figure 2). As mentioned above, 2,4-D is dicot-specific, so the decline of the monocot species, large-leaf pondweed, small pondweed, and white-stem pondweed are not likely from the treatment. Coontail was the only dicot that showed a significant decline (Figure 2). Herbicide application occurred in May before the majority of native plants should be actively growing in order to target EWM specifically, but it is possible that coontail could have been affected by the herbicide. However, coontail does not truly root to the sediment and is easily moved about the lake in masses; therefore, differences in coontail frequency between surveys may be the result of wind direction during the days preceding the surveys. There were two species that had a statistically significant increase in occurrence, clasping-leaf pondweed (monocot) and the macroalgae group of stoneworts (Figure 2).

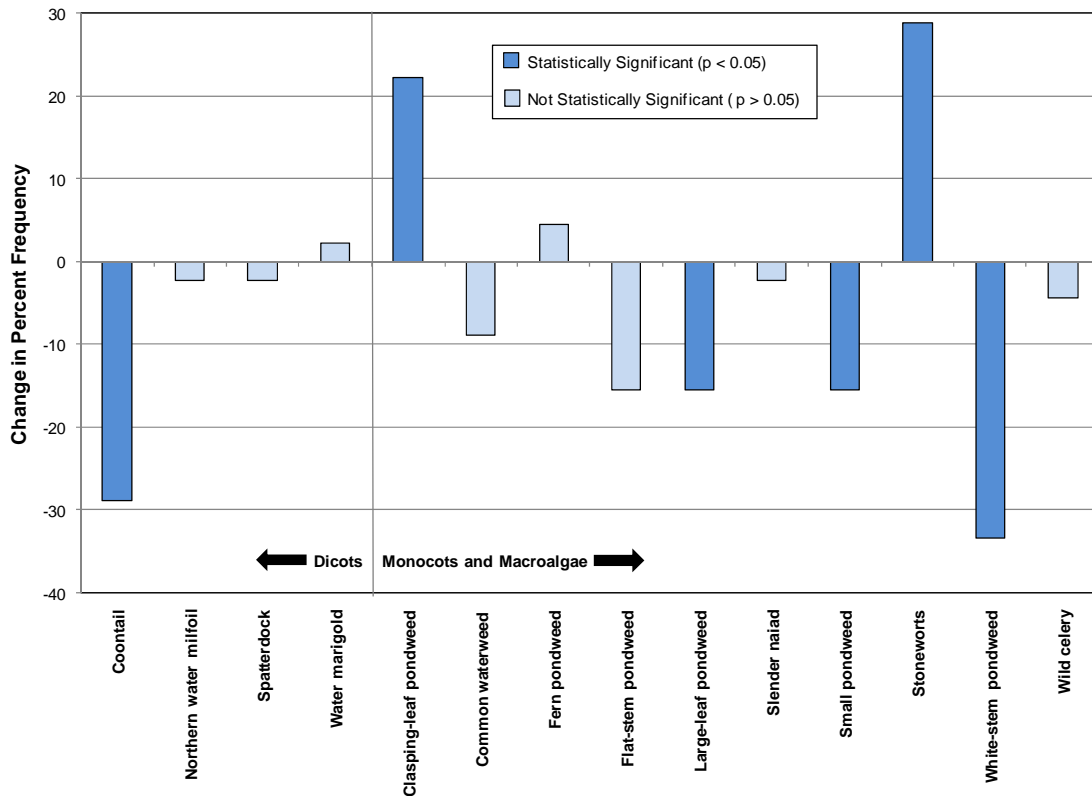


Figure 2. Native plant change in percent frequency from 2008 to 2009 on Little Saint Germain Lake.

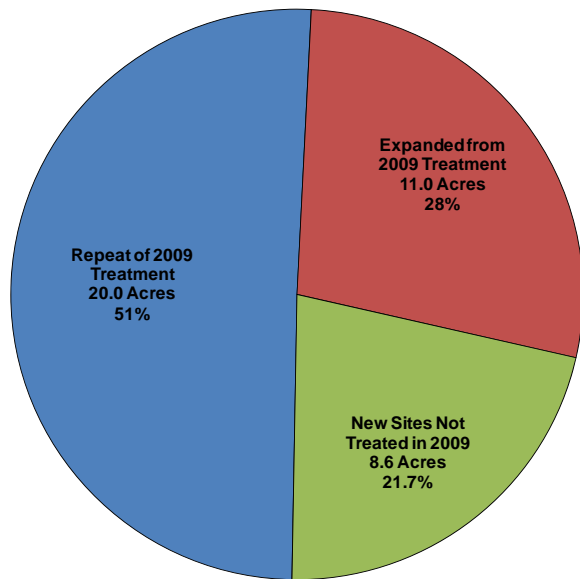


Figure 4. Common acreage comparison between 2009 treatment and proposed treatment for 2010.

the 2009 treatment; which is just shy of meeting the qualitative success criteria discussed in the post treatment survey section. Also the qualitative analysis revealed that there was not a significant reduction in EWM occurrence within the five treatment sites that contained usable quantitative data.

The reality is that the LSGPRD is in line to retreat many of the 2009 treatment areas in 2010, most of which are in West Bay, likely due to the deeper water and steep slopes. Retreating areas is not uncommon in EWM management as dense areas often require multiple years of the treatment to drastically decrease the site's density. One explanation for this may be the fact that the colony rebounds after treatment through germination of existing stock within the sediment's seed bank and/or through the propagation of new plants through dormant root crowns. As the area is repetitively treated, the source for new plants is depleted and the colony cannot rebound. This is much like using repeated, annual treatments to reduce the turion (reproductive structure) bank which is common in the management of CLP. In the situation of CLP, we expect to treat the same area annually over 3 to 5 years in order to deplete the turion bank held in the sediment.

Impacts resulting from the 2009 treatments that were not detectable during the 2009 summer surveys *may* become apparent during the 2010 spring and summer surveys. In some lakes, surveys completed the summer following treatment indicated poor treatment efficacy, but when the sites are reassessed the following year, treatment impacts can be seen in the form of reduced biomass. In cases such as this, the EWM may be injured to the point that it can survive the growing season following treatment, but not the following winter because the plant did not have the ability to build energy reserves in its root crown. As a result, the plant is unable to produce foliage the following spring and perishes. This would be analogous to a squirrel being injured during the summer. That squirrel may have the ability to feed itself while food supplies are high,

Thirteen of the 20 sites treated in 2009 require repeat treatment, resulting in 51% of the 2010 treatment being common to areas treated during May 2009 (Map 4). Also, approximately 28% of the proposed 2010 treatment acreage is comprised by expanded areas of EWM during the 2009 growing season. The majority of this expansion is contained within the sites in West Bay (Map 4). Approximately 8.6 acres of newly proposed treatment areas are completely independent from previously treated areas (Figure 3); which occur in East, No Fish, and South Bays. Please note that all the new treatment areas, except C-10, were discovered during the 2008 peak biomass survey or earlier, as opposed to being newly discovered during this year. However, the EWM density of these areas has increased and now warrant treatment.

Slightly less than 75% of the treatment areas were reduced by at least one density rating after

but not the ability to gather and store food for the winter. As a result, the squirrel would survive the summer, but not make it through the winter or following spring when food is not as plentiful.

As mentioned earlier, the steep slopes, particularly in West Bay of Little Saint Germain Lake, are likely a primary factor reducing the efficacy of the treatments. The target herbicide concentration may be met in some parts of the treatment area and not others due to increased water volume with depth. Although the validity of the following statement is unknown, it is also theorized that either the granular formulation itself or the dissolved chemical may move downhill, outside of the area in which it was intended.

Originally, the proposed treatment for 2010 included increasing the treatment dose of Navigate from 150 lbs/acre to 200 lbs/acre within all areas in West Bay (Map 4). All other treatment areas are recommended to be treated at 150 lbs/acre. Of particular concern is the area by the boat landing, site N-10, because this is a high navigation area which increases the potential of EWM fragments to be spread to other areas by boat traffic.

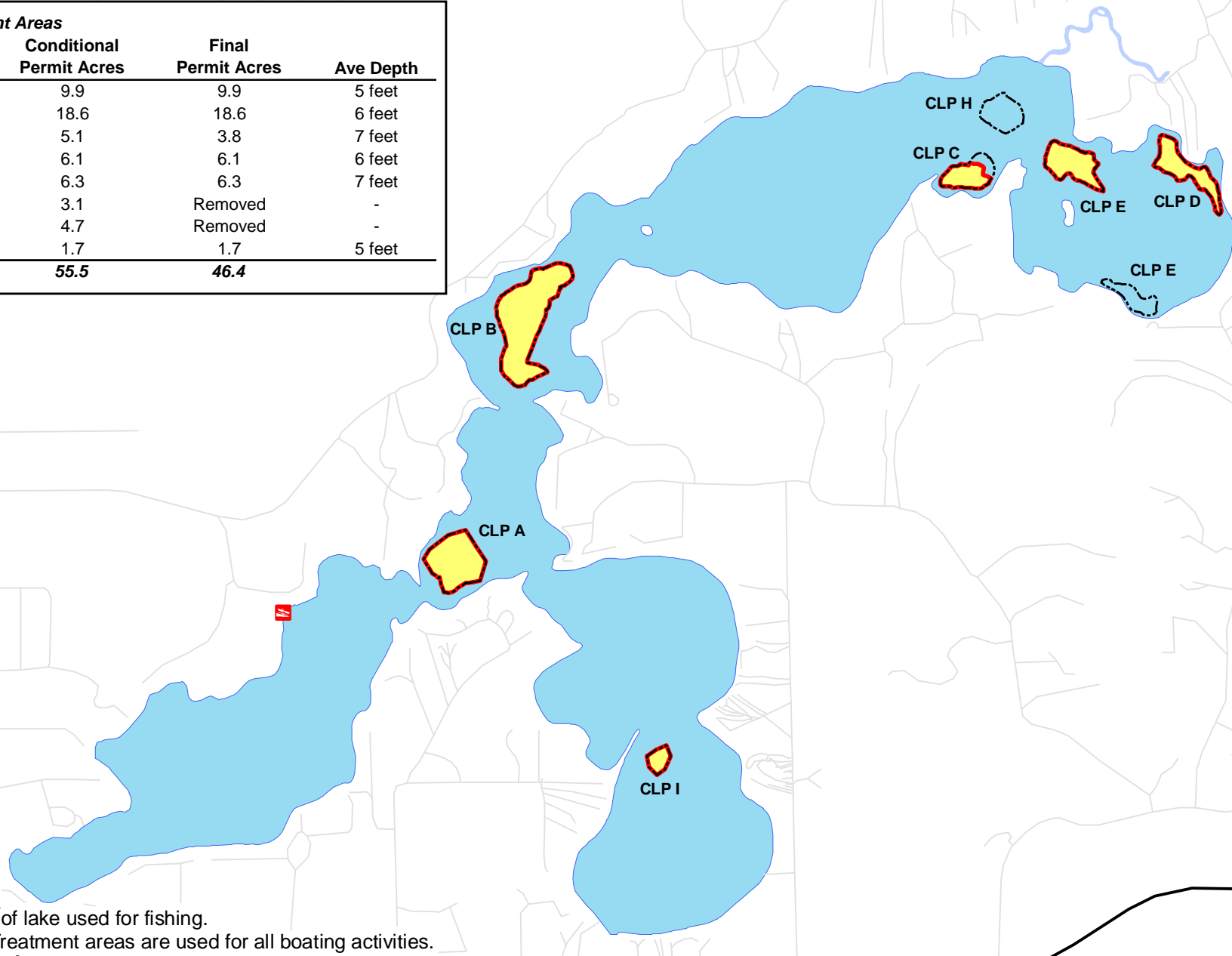
This strategy was presented to the LSGLPRD in advance of their Board of Commissioners meeting on March 3, 2010. At the meeting, the commissioner's discussion largely focused on the increased herbicide dose recommendation in West Bay for the control of EWM. Although the board understood the reasoning behind the increased dose, they had reservations whether the strategy would produce greater results. This uncertainty coupled with the increased financial strain the strategy would have on the district has lead them to the following decision:

- Proceed with the treatment of CLP as proposed.
- For all treatment sites other than West Bay, proceed at 150 lbs/acre as proposed.
- Treat high traffic areas in West Bay (J-10 and N-10) at 200 lbs/acre as proposed.
- Do not treat the remaining 16.0 acres of West Bay.

A current study by the WDNR and the United States Army Corps of Engineers (USACOE) is investigating herbicide concentrations in the water column (residuals) at different locations and lengths of time after treatment. At this time, the focus of the study surrounds the use of liquid 2,4-D, but also includes research on granular 2,4-D and triclopyr. The LSGLPRD hopes to be invited to participate in this research to allow a better understanding of herbicide exposure concentrations and times as they pertain to specific areas in Little Saint Germain Lake.

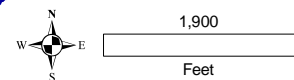
CLP Treatment Areas

Site	Conditional Permit Acres	Final Permit Acres	Ave Depth
A-09	9.9	9.9	5 feet
B-09	18.6	18.6	6 feet
C-09	5.1	3.8	7 feet
D-09	6.1	6.1	6 feet
E-09	6.3	6.3	7 feet
G-09	3.1	Removed	-
H-09	4.7	Removed	-
I-09	1.7	1.7	5 feet
Total	55.5	46.4	



Please Note:

1. Entire area of lake used for fishing.
2. Proposed Treatment areas are used for all boating activities.



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Sources:
 Roads & Hydro: WDNR
 Aquatic Plant Surveys: Onterra 2008-09
 Map date: February 4, 2010



Extent of large map shown in red.

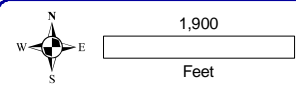
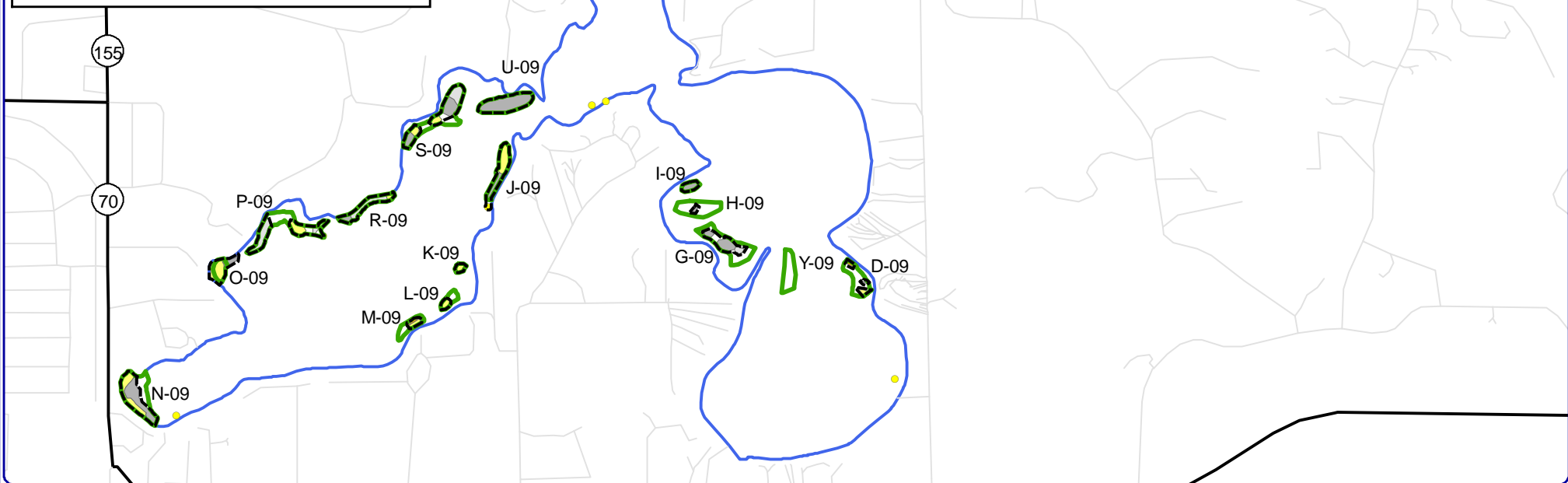
Legend

- 2008 CLP Treatment Area
- 2009 CLP Treatment Area

Map 1
 Little Saint Germain Lake
 Vilas County, Wisconsin
**2008 and 2009
 Treatment Areas**

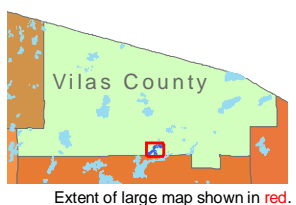
EWM Treatment Areas -150 lbs/acre

Site	Conditional Permit Acres	Final Permit Acres	Ave Depth
A-09	4.7	2.7	5 feet
B-09	0.6	Removed	-
C-09	0.3	Removed	-
D-09	0.2	1.8	5 feet
E-09	0.1	Merged with D-09	-
F-09	0.2	Merged with D-09	-
G-09	1.7	3.2	6 feet
H-09	0.2	2.2	5 feet
I-09	0.5	0.5	5 feet
J-09	2.0	1.8	5 feet
K-09	0.3	0.3	5 feet
L-09	0.3	0.7	6 feet
M-09	0.4	0.9	5 feet
N-09	3.0	3.9	5 feet
O-09	1.7	0.9	8 feet
P-09	1.2	3.6	8 feet
Q-09	1.4	Merged with P-09	-
R-09	1.5	1.5	7 feet
S-09	0.8	3.9	9 feet
T-09	2.3	Merged with S-09	-
U-09	2.9	2.9	9 feet
V-09	1.7	1.7	5 feet
W-09	0.3	1.9	5 feet
X-09	3.8	3.8	6 feet
Y-09	-	1.6	6 feet
Z-09	-	0.4	5 feet
Total	32.2	40.2	



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Sources:
 Roads & Hydro: WDNR
 Aquatic Plants Surveys: Onterra 2008-09
 Map date: December 1, 2009



Legend

- EWM Survey Results (Aug 2008)**
- Clumps of Plants
 - Highly Scattered
 - Scattered
 - Dominant
 - Highly Dominant
 - Surface Matting (none found)

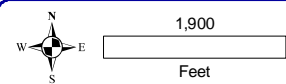
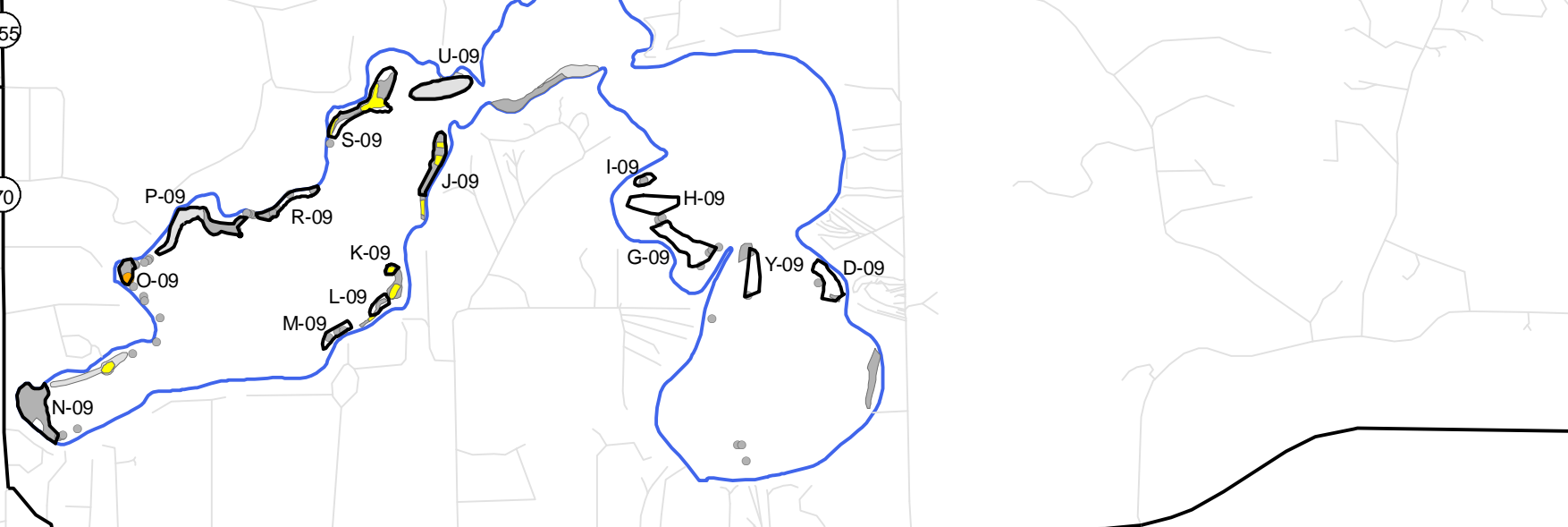
- 2009 Final EWM Treatment Areas
- 2009 Proposed EWM Treatment Areas
- Public Boat Landing

Map 2
 Little Saint Germain Lake
 Vilas County, Wisconsin

**2008 EWM Densities
 and 2009 Treatment Areas**

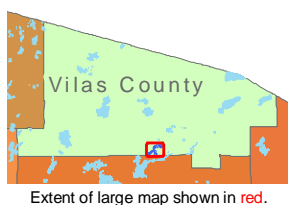
EWM Treatment Areas -150 lbs/acre

Site	Conditional Permit Acres	Final Permit Acres	Ave Depth
A-09	4.7	2.7	5 feet
B-09	0.6	Removed	-
C-09	0.3	Removed	-
D-09	0.2	1.8	5 feet
E-09	0.1	Merged with D-09	-
F-09	0.2	Merged with D-09	-
G-09	1.7	3.2	6 feet
H-09	0.2	2.2	5 feet
I-09	0.5	0.5	5 feet
J-09	2.0	1.8	5 feet
K-09	0.3	0.3	5 feet
L-09	0.3	0.7	6 feet
M-09	0.4	0.9	5 feet
N-09	3.0	3.9	5 feet
O-09	1.7	0.9	8 feet
P-09	1.2	3.6	8 feet
Q-09	1.4	Merged with P-09	-
R-09	1.5	1.5	7 feet
S-09	0.8	3.9	9 feet
T-09	2.3	Merged with S-09	-
U-09	2.9	2.9	9 feet
V-09	1.7	1.7	5 feet
W-09	0.3	1.9	5 feet
X-09	3.8	3.8	6 feet
Y-09	-	1.6	6 feet
Z-09	-	0.4	5 feet
Total	32.2	40.2	



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Sources:
 Roads & Hydro: WDNR
 Aquatic Plants Surveys: Onterra 2008-09
 Map date: December 8, 2009



Legend

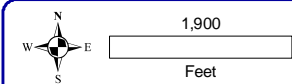
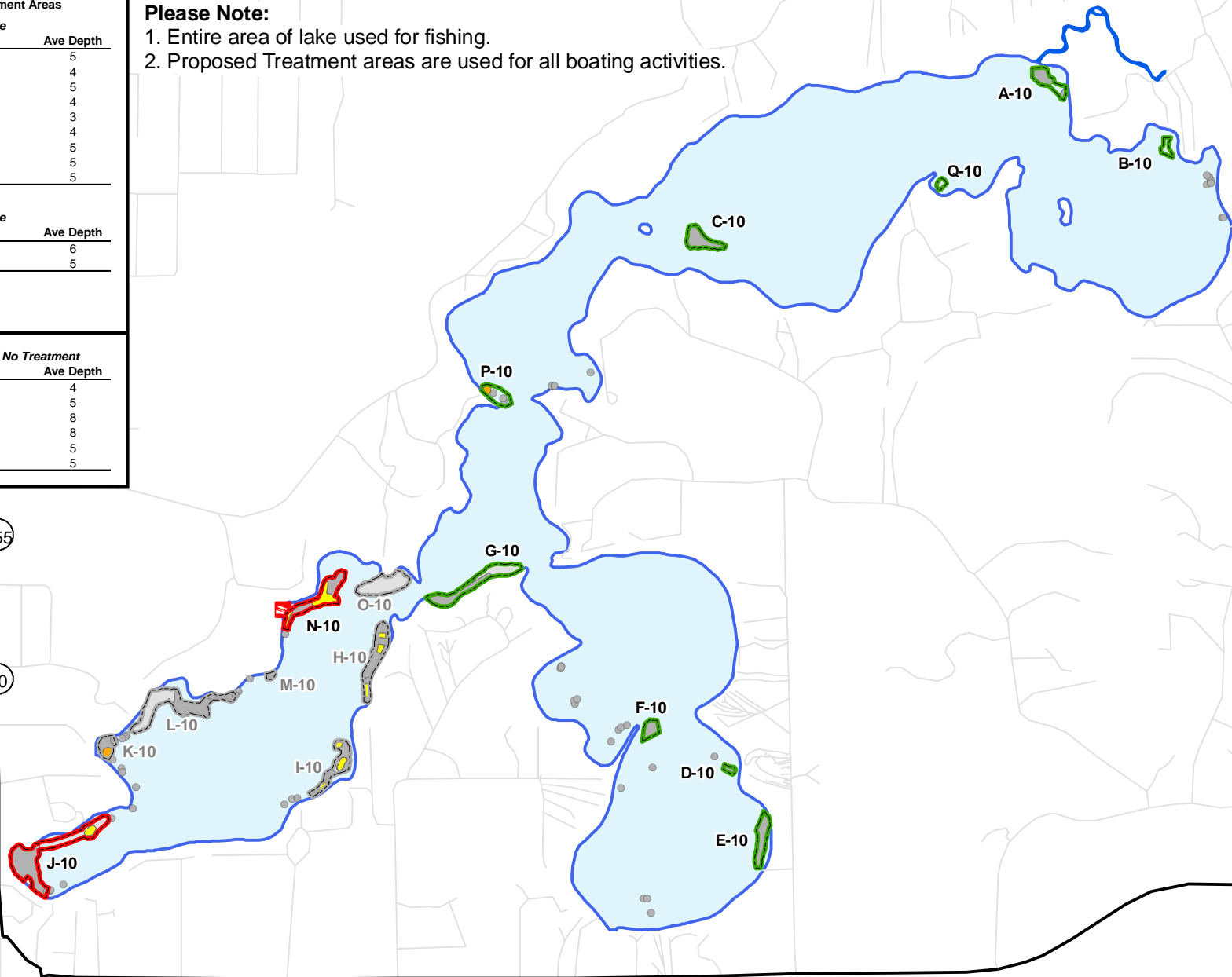
- EWM Survey Results (Sept 2009)**
- Clumps of Plants
 - Highly Scattered
 - Scattered
 - Dominant
 - Highly Dominant (none found)
 - Surface Matting (none found)
- 2009 Final EWM Treatment Areas
- Public Boat Landing

Map 3
 Little Saint Germain Lake
 Vilas County, Wisconsin
**2009 Treatment Areas
 and Post Treatment
 EWM Densities**

2010 Proposed Treatment Areas		
Treatment Areas - 150 lbs/acre		
Site	Acres	Ave Depth
A-10	1.8	5
B-10	0.5	4
C-10	2.0	5
D-10	0.3	4
E-10	1.9	3
F-10	1.0	4
G-10	3.9	5
P-10	1.5	5
Q-10	0.3	5
Sub Total	13.2	
Treatment Areas - 200 lbs/acre		
Site	Acres	Ave Depth
N-10	3.6	6
J-10	6.8	5
Sub Total	10.4	
Grand Total	23.6	
Secondary Treatment Areas - No Treatment		
Site	Acres	Ave Depth
H-10	3.2	4
I-10	2.5	5
K-10	1.2	8
L-10	5.7	8
M-10	0.2	5
O-10	3.2	5
Sub Total	16.0	

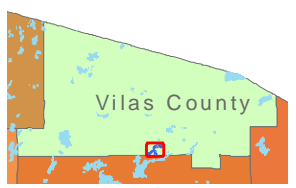
Please Note:

1. Entire area of lake used for fishing.
2. Proposed Treatment areas are used for all boating activities.



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Sources:
 Roads & Hydro: WDNR
 Aquatic Plants Surveys: Onterra 2009
 Map date: December 8, 2009



Extent of large map shown in red.

EWM Survey Results (Sept 2009)

- Few or Single Plants
- Small Plant Colony
- ☁ Highly Scattered
- ☁ Scattered
- ☁ Dominant
- ☁ Highly Dominant (*none found*)
- ☁ Surface Matting (*none found*)

2010 Proposed EWM Treatment Areas

- 🟩 150 lbs/acre
- 🔴 200 lbs/acre
- 🔲 Not Treated
- 🚤 Public Boat Landing

Map 4
Little Saint Germain Lake
 Vilas County, Wisconsin
2010 Proposed
Eurasian Water Milfoil
Treatment Areas v2

Point Number	Latitude (Decimal Degrees)	Longitude (Decimal Degrees)	Depth (ft)	Sediment type	Rope (R); Pole (P); Visual (V)	Myriophyllum spicatum	Potamogeton crispus	Notes
1	45.91295	-89.46418	6	M	P			No Vegetation
2	45.91313	-89.46418	5	M	P			No Vegetation
3	45.91331	-89.46418	5	M	P			No Vegetation
4	45.91349	-89.46418	5	M	P			No Vegetation
5	45.91295	-89.46392	6	M	P			No Vegetation
6	45.91313	-89.46392	6	M	P			No Vegetation
7	45.91331	-89.46392	5	M	P			No Vegetation
8	45.91349	-89.46392	5	M	P			No Vegetation
9	45.91295	-89.46367	6	M	P			No Vegetation
10	45.91313	-89.46366	5	M	P			No Vegetation
11	45.91331	-89.46366	5	M	P			No Exotic
12	45.91349	-89.46366	5	M	P			No Vegetation
13	45.91295	-89.46341	6	M	P			No Vegetation
14	45.91313	-89.46341	5	M	P			No Vegetation
15	45.91331	-89.46340	6	M	P			No Vegetation
16	45.91349	-89.46340	6	M	P			No Vegetation
17	45.92202	-89.46085	6	M	P			No Exotic
18	45.92220	-89.46084	7	M	P			No Exotic
19	45.92238	-89.46084	7	M	P			No Exotic
20	45.92045	-89.46084	7	M	P			No Exotic
22	45.92063	-89.46084	7	M	P			No Exotic
23	45.92274	-89.46084	7	M	P			No Vegetation
24	45.92081	-89.46084	7	M	P			No Exotic
25	45.92292	-89.46084	7	M	P		1	
26	45.92310	-89.46084	7	M	P			No Vegetation
27	45.92328	-89.46083	7	M	P			No Exotic
28	45.92202	-89.46059	7	M	P			No Vegetation
29	45.92220	-89.46059	7	M	P			No Vegetation
30	45.92238	-89.46058	7	M	P			No Vegetation
31	45.92045	-89.46058	7	M	P			No Vegetation
32	45.92256	-89.46058	7	M	P			No Vegetation
33	45.92063	-89.46058	7	M	P			No Vegetation
34	45.92274	-89.46058	7	M	P			No Vegetation
35	45.92081	-89.46058	7	M	P			No Exotic
36	45.92292	-89.46058	7	M	P			No Vegetation
37	45.92310	-89.46058	7	M	P			No Vegetation
38	45.92328	-89.46058	7	M	P			No Exotic

Point Number	Latitude (Decimal Degrees)	Longitude (Decimal Degrees)	Depth (ft)	Sediment type	Rope (R); Pole (P); Visual (V)	Myriophyllum spicatum	Potamogeton crispus	Notes
39	45.92201	-89.46033	7	M	P			No Exotic
40	45.92219	-89.46033	7	M	P			No Exotic
41	45.92237	-89.46033	7	M	P			No Exotic
42	45.92045	-89.46033	7	M	P			No Exotic
43	45.92255	-89.46032	7	M	P		1	
44	45.92063	-89.46032	7	M	P			No Vegetation
45	45.92273	-89.46032	7	M	P			No Exotic
46	45.92081	-89.46032	7	M	P			No Exotic
47	45.92291	-89.46032	7	M	P			No Exotic
48	45.92309	-89.46032	7	M	P			No Vegetation
49	45.92327	-89.46032	7	M	P			No Vegetation
50	45.92201	-89.46007	7	M	P			No Exotic
51	45.92219	-89.46007	7	M	P		1	
52	45.92237	-89.46007	8	M	P			No Exotic
53	45.92045	-89.46007	7	M	P			No Exotic
54	45.92255	-89.46007	7	M	P			No Exotic
55	45.92063	-89.46007	7	M	P			No Exotic
56	45.92273	-89.46006	7	M	P			No Exotic
57	45.92081	-89.46006	7	M	P			No Exotic
58	45.92291	-89.46006	7	M	P			No Exotic
59	45.92309	-89.46006	7	M	P		1	
60	45.92327	-89.46006	7	M	P			No Exotic
61	45.92201	-89.45981	8	M	P			No Exotic
62	45.92219	-89.45981	8	M	P		1	
63	45.92237	-89.45981	8	M	P			No Exotic
64	45.92255	-89.45981	8	M	P			No Vegetation
65	45.92273	-89.45981	8	M	P			No Exotic
66	45.92291	-89.45981	7	M	P		1	
67	45.92309	-89.45980	7	M	P			No Vegetation
68	45.92327	-89.45980	8	M	P			No Exotic
69	45.92201	-89.45956	8	M	P			No Exotic
70	45.92219	-89.45955	8	M	P			No Exotic
71	45.92237	-89.45955	8	M	P			No Exotic
72	45.92255	-89.45955	8	M	P			No Exotic
73	45.92273	-89.45955	8	M	P			No Exotic
74	45.92291	-89.45955	8	M	P			No Vegetation
75	45.92309	-89.45955	8	M	P			No Vegetation

Point Number	Latitude (Decimal Degrees)	Longitude (Decimal Degrees)	Depth (ft)	Sediment type	Rope (R); Pole (P); Visual (V)	Myriophyllum spicatum	Potamogeton crispus	Notes
76	45.92327	-89.45954	8	M	P			No Exotic
77	45.92382	-89.45881	11	M	P			No Vegetation
79	45.92418	-89.45881	6	M	P			No Vegetation
80	45.92381	-89.45856	8	M	P			No Exotic
81	45.92399	-89.45855	8	M	P			No Exotic
82	45.92417	-89.45855	9	M	P			No Exotic
83	45.92381	-89.45830	8	M	P		1	
84	45.92399	-89.45830	8	M	P			No Exotic
85	45.92417	-89.45829	7	M	P		1	
86	45.92381	-89.45804	8	M	P			No Vegetation
87	45.92399	-89.45804	8	M	P			No Exotic
88	45.92417	-89.45804	7	M	P			No Vegetation
89	45.92739	-89.43796	6	M	P			No Vegetation
90	45.92757	-89.43796	8	M	P			No Vegetation
91	45.92739	-89.43771	6	M	P			No Vegetation
92	45.92757	-89.43770	7	M	P			No Vegetation
93	45.92739	-89.43745	7	M	P			No Vegetation
94	45.92757	-89.43745	7	M	P			No Vegetation
95	45.92739	-89.43719	6	M	P			No Vegetation
96	45.92757	-89.43719	7	M	P			No Vegetation
97	45.92739	-89.43693	6	M	P			No Vegetation
98	45.92757	-89.43693	6	M	P			No Vegetation
99	45.92742	-89.43643	7	M	P			No Vegetation
100	45.92760	-89.43643	8	M	P			No Vegetation
101	45.92778	-89.43643	7	M	P			No Vegetation
102	45.92796	-89.43643	7	M	P			No Vegetation
103	45.92814	-89.43643	7	M	P			No Vegetation
104	45.92742	-89.43617	8	M	P			No Vegetation
105	45.92760	-89.43617	8	M	P			No Vegetation
106	45.92778	-89.43617	7	M	P			No Vegetation
107	45.92796	-89.43617	8	M	P			No Vegetation
108	45.92814	-89.43617	8	M	P			No Vegetation
109	45.92779	-89.42682	8	M	P			No Vegetation
110	45.92797	-89.42682	7	M	P			No Exotic
111	45.92815	-89.42682	7	M	P			No Vegetation
112	45.92833	-89.42682	6	M	P			No Vegetation
113	45.92851	-89.42681	6	M	P			No Vegetation

Point Number	Latitude (Decimal Degrees)	Longitude (Decimal Degrees)	Depth (ft)	Sediment type	Rope (R); Pole (P); Visual (V)	Myriophyllum spicatum	Potamogeton crispus	Notes
114	45.92869	-89.42681	6	M	P			No Exotic
115	45.92779	-89.42656	8	M	P			No Vegetation
116	45.92797	-89.42656	7	M	P			No Exotic
117	45.92815	-89.42656	7	M	P			No Exotic
118	45.92833	-89.42656	6	M	P		1	
119	45.92851	-89.42656	7	M	P			No Exotic
120	45.92869	-89.42655	4	M	P			No Exotic
121	45.92779	-89.42631	7	M	P			No Vegetation
122	45.92797	-89.42630	7	M	P			No Vegetation
123	45.92815	-89.42630	7	M	P			No Vegetation
124	45.92833	-89.42630	5	M	P			No Vegetation
125	45.92851	-89.42630	3	M	P			No Exotic
126	45.92869	-89.42630	6	M	P			No Vegetation
127	45.92739	-89.42490	4	M	P			No Exotic
128	45.92757	-89.42490	6	M	P			No Vegetation
129	45.92721	-89.42490	6	M	P			No Vegetation
130	45.92720	-89.42464	6	M	P			No Vegetation
131	45.92738	-89.42464	6	M	P			No Vegetation
132	45.92756	-89.42464	6	M	P			No Vegetation
133	45.92780	-89.43229	7	M	P			No Vegetation
134	45.92798	-89.43228	7	M	P			No Vegetation
135	45.92816	-89.43228	6	M	P			No Vegetation
136	45.92834	-89.43228	8	M	P			No Exotic
137	45.92780	-89.43203	7	M	P			No Vegetation
138	45.92798	-89.43203	7	M	P		1	
139	45.92816	-89.43202	6	M	P		1	
140	45.92834	-89.43202	7	M	P			No Vegetation
141	45.92780	-89.43177	6	M	P			No Exotic
142	45.92798	-89.43177	7	M	P		1	
143	45.92816	-89.43177	6	M	P			No Vegetation
144	45.92834	-89.43176	7	M	P			No Vegetation
145	45.92780	-89.43151	7	M	P			No Vegetation
146	45.92798	-89.43151	7	M	P			No Exotic
147	45.92816	-89.43151	7	M	P		1	
148	45.92834	-89.43151	7	M	P		1	
149	45.92780	-89.43125	7	M	P			No Exotic
150	45.92798	-89.43125	6	M	P			No Exotic

Point Number	Latitude (Decimal Degrees)	Longitude (Decimal Degrees)	Depth (ft)	Sediment type	Rope (R); Pole (P); Visual (V)	Myriophyllum spicatum	Potamogeton crispus	Notes
151	45.92816	-89.43125	6	M	P			No Vegetation
152	45.92834	-89.43125	6	M	P			No Vegetation
153	45.92779	-89.43102	7	M	P			No Exotic
154	45.92797	-89.43101	6	M	P			No Exotic
157	45.92323	-89.42900	6	M	P			No Vegetation
158	45.92341	-89.42900	6	M	P			No Vegetation
159	45.92322	-89.42874	6	M	P			No Vegetation
160	45.92340	-89.42874	6	M	P			No Exotic
161	45.92322	-89.42849	6	M	P			No Vegetation
162	45.92340	-89.42848	6	M	P			No Vegetation
163	45.92267	-89.42805	6	M	P			No Vegetation
164	45.92285	-89.42805	6	M	P			No Vegetation
165	45.92267	-89.42779	6	M	P			No Vegetation
166	45.92285	-89.42779	6	M	P			No Exotic
167	45.92267	-89.42754	6	M	P			No Vegetation
168	45.92285	-89.42753	6	M	P			No Vegetation
169	45.92954	-89.43567	9	M	P			No Vegetation
170	45.92972	-89.43567	9	M	P			No Vegetation
171	45.92990	-89.43567	8	M	P			No Vegetation
172	45.93008	-89.43567	9	M	P			No Vegetation
173	45.92954	-89.43541	9	M	P			No Vegetation
174	45.92972	-89.43541	8	M	P			No Vegetation
175	45.92990	-89.43541	8	M	P			No Vegetation
176	45.93008	-89.43541	8	M	P			No Vegetation
177	45.92953	-89.43516	8	M	P			No Vegetation
178	45.92971	-89.43515	8	M	P			No Vegetation
179	45.92989	-89.43515	8	M	P			No Vegetation
180	45.93007	-89.43515	8	M	P			No Vegetation
181	45.92953	-89.43490	6	M	P			No Exotic
182	45.92971	-89.43490	8	M	P			No Vegetation
183	45.92989	-89.43489	8	M	P			No Vegetation
184	45.93007	-89.43489	8	M	P			No Vegetation
185	45.92971	-89.43464	8	M	P			No Vegetation
186	45.92989	-89.43464	8	M	P			No Vegetation
187	45.93007	-89.43463	8	M	P			No Vegetation
188	45.90545	-89.45337	9	M	P			No Exotic
189	45.90563	-89.45334	8	M	P			No Exotic

Point Number	Latitude (Decimal Degrees)	Longitude (Decimal Degrees)	Depth (ft)	Sediment type	Rope (R); Pole (P); Visual (V)	Myriophyllum spicatum	Potamogeton crispus	Notes
190	45.90581	-89.45330	8	M	P			No Exotic
191	45.90599	-89.45326	8	M	P			No Exotic
192	45.90616	-89.45322	8	M	P			No Exotic
193	45.90634	-89.45318	7	M	P			No Exotic
194	45.90189	-89.45629	7	M	P			No Exotic
195	45.90207	-89.45629	7	M	P			No Exotic
196	45.90225	-89.45629	7	M	P			No Exotic
197	45.90171	-89.45604	7	M	P			No Exotic
198	45.90189	-89.45604	7	M	P			No Exotic
199	45.90207	-89.45603	7	M	P			No Exotic
200	45.90225	-89.45603	8	M	P			No Exotic
201	45.90153	-89.45578	7	M	P			No Exotic
202	45.90171	-89.45578	7	M	P			No Exotic
203	45.90189	-89.45578	7	M	P			No Exotic
204	45.90207	-89.45578	7	M	P			No Exotic
205	45.90225	-89.45577	8	M	P			No Exotic
206	45.90152	-89.45552	7	M	P			No Exotic
207	45.90170	-89.45552	7	M	P			No Exotic
208	45.90188	-89.45552	7	M	P			No Exotic
209	45.90206	-89.45552	8	M	P			No Exotic
210	45.90152	-89.45527	8	M	P			No Exotic
211	45.90170	-89.45526	7	M	P			No Exotic
212	45.90188	-89.45526	8	M	P			No Exotic

Point Number	Latitude (Decimal Degrees)	Longitude (Decimal Degrees)	Depth (ft)	Sediment type	Rope (R); Pole (P); Visual (V)	Myriophyllum spicatum	Potamogeton crispus	Notes
1	45.91295	-89.46418	5	M	P			No Exotic
2	45.91313	-89.46418	5	M	P			No Exotic
3	45.91331	-89.46418	4	M	P			No Exotic
4	45.91349	-89.46418	4	M	P			No Exotic
5	45.91295	-89.46392	7	S	P			No Vegetation
6	45.91313	-89.46392	5	M	P			No Vegetation
7	45.91331	-89.46392	5	M	P			No Exotic
8	45.91349	-89.46392	5	M	P			No Exotic
9	45.91295	-89.46367	5	M	P			No Exotic
10	45.91313	-89.46366	5	M	P			No Exotic
11	45.91331	-89.46366	5	M	P			No Exotic
12	45.91349	-89.46366	5	M	P			No Vegetation
13	45.91295	-89.46341	5	M	P			No Vegetation
14	45.91313	-89.46341	5	M	P			No Vegetation
15	45.91331	-89.46340	5	M	P			No Vegetation
16	45.91349	-89.46340	5	M	P			No Vegetation
17	45.92202	-89.46085	7	M	P			No Exotic
18	45.92220	-89.46084	7	M	P			No Exotic
19	45.92238	-89.46084	6	M	P			No Exotic
20	45.92045	-89.46084	6	M	P			No Vegetation
21	45.92256	-89.46084	7	M	P			No Exotic
22	45.92063	-89.46084	7	M	P			No Exotic
23	45.92274	-89.46084	7	M	P			No Exotic
24	45.92081	-89.46084	7	M	P			No Exotic
25	45.92292	-89.46084	7	M	P			No Exotic
26	45.92310	-89.46084	7	M	P			No Exotic
27	45.92328	-89.46083	6	M	P			No Exotic
28	45.92202	-89.46059	8	M	P			No Vegetation
29	45.92220	-89.46059	9	M	P			No Vegetation
30	45.92238	-89.46058	8	M	P			No Exotic
31	45.92045	-89.46058	6	M	P			No Exotic
32	45.92256	-89.46058	8	M	P			No Exotic
33	45.92063	-89.46058	7	M	P			No Exotic
34	45.92274	-89.46058	8	M	P			No Exotic
35	45.92081	-89.46058	7	M	P			No Exotic
36	45.92292	-89.46058	7	M	P			No Vegetation
37	45.92310	-89.46058	7	M	P			No Exotic

Point Number	Latitude (Decimal Degrees)	Longitude (Decimal Degrees)	Depth (ft)	Sediment type	Rope (R); Pole (P); Visual (V)	Myriophyllum spicatum	Potamogeton crispus	Notes
38	45.92328	-89.46058	7	M	P			No Exotic
39	45.92201	-89.46033	8	M	P			No Vegetation
40	45.92219	-89.46033	8	M	P			No Exotic
41	45.92237	-89.46033	9	M	P			No Exotic
42	45.92045	-89.46033	7	M	P			No Vegetation
43	45.92255	-89.46032	8	M	P			No Vegetation
44	45.92063	-89.46032	7	M	P			No Exotic
45	45.92273	-89.46032	8	M	P			No Vegetation
46	45.92081	-89.46032	7	M	P			No Exotic
47	45.92291	-89.46032	8	M	P			No Vegetation
48	45.92309	-89.46032	8	M	P		1	
49	45.92327	-89.46032	9	M	P		1	
50	45.92201	-89.46007	7	M	P			No Vegetation
51	45.92219	-89.46007	8	M	P			No Exotic
52	45.92237	-89.46007	8	M	P			No Vegetation
53	45.92045	-89.46007	6	M	P			No Exotic
54	45.92255	-89.46007	8	M	P			No Exotic
55	45.92063	-89.46007	8	M	P			No Exotic
56	45.92273	-89.46006	8	M	P		1	
57	45.92081	-89.46006	7	M	P			No Exotic
58	45.92291	-89.46006	8	M	P			No Vegetation
59	45.92309	-89.46006	8	M	P		1	
60	45.92327	-89.46006	8	M	P		1	
61	45.92201	-89.45981	9	M	P			No Vegetation
62	45.92219	-89.45981	7	M	P			No Vegetation
63	45.92237	-89.45981	8	M	P			No Vegetation
64	45.92255	-89.45981	9	M	P		1	
65	45.92273	-89.45981	9	M	P			No Vegetation
66	45.92291	-89.45981	8	M	P			No Vegetation
67	45.92309	-89.45980	8	M	P			No Vegetation
68	45.92327	-89.45980	8	M	P			No Vegetation
69	45.92201	-89.45956	8	M	P			
70	45.92219	-89.45955	9	M	P			No Exotic
71	45.92237	-89.45955	10	M	P			No Vegetation
72	45.92255	-89.45955	8	M	P			No Vegetation
73	45.92273	-89.45955	8	M	P			No Vegetation
74	45.92291	-89.45955	8	M	P			No Vegetation

Point Number	Latitude (Decimal Degrees)	Longitude (Decimal Degrees)	Depth (ft)	Sediment type	Rope (R); Pole (P); Visual (V)	Myriophyllum spicatum	Potamogeton crispus	Notes
75	45.92309	-89.45955	8	M	P			No Vegetation
76	45.92327	-89.45954	8	M	P			No Vegetation
77	45.92382	-89.45881	8	M	P			No Vegetation
78	45.92400	-89.45881	8	M	P			No Vegetation
79	45.92418	-89.45881	7	M	P			No Vegetation
80	45.92381	-89.45856	8	M	P			No Vegetation
81	45.92399	-89.45855	8	M	P		1	
82	45.92417	-89.45855	8	M	P			No Exotic
83	45.92381	-89.45830	8	M	P			No Vegetation
84	45.92399	-89.45830	8	M	P			No Exotic
85	45.92417	-89.45829	8	M	P			No Vegetation
86	45.92381	-89.45804	7	M	P			No Vegetation
87	45.92399	-89.45804	8	M	P			No Vegetation
88	45.92417	-89.45804	8	M	P			No Vegetation
89	45.92739	-89.43796	6	M	P			No Vegetation
90	45.92757	-89.43796	7	M	P			No Vegetation
91	45.92739	-89.43771	7	M	P			No Vegetation
92	45.92757	-89.43770	7	M	P			No Vegetation
93	45.92739	-89.43745	6	M	P	1	1	
94	45.92757	-89.43745	7	M	P			No Vegetation
95	45.92739	-89.43719	7	M	P			No Exotic
96	45.92757	-89.43719	7	M	P		1	
97	45.92739	-89.43693	8	M	P		1	
98	45.92757	-89.43693	7	M	P			No Vegetation
99	45.92742	-89.43643	7	M	P			No Vegetation
100	45.92760	-89.43643	7	M	P		1	
101	45.92778	-89.43643	7	M	P			No Exotic
102	45.92796	-89.43643	7	M	P			No Vegetation
103	45.92814	-89.43643	8	M	P			No Vegetation
104	45.92742	-89.43617	7	M	P			No Vegetation
105	45.92760	-89.43617	7	M	P		1	
106	45.92778	-89.43617	8	M	P			No Vegetation
107	45.92796	-89.43617	8	M	P			No Vegetation
108	45.92814	-89.43617	10	M	P			No Vegetation
109	45.92779	-89.42682	8	M	P			No Vegetation
110	45.92797	-89.42682	7	M	P			No Vegetation
111	45.92815	-89.42682	7	M	P			

Point Number	Latitude (Decimal Degrees)	Longitude (Decimal Degrees)	Depth (ft)	Sediment type	Rope (R); Pole (P); Visual (V)	Myriophyllum spicatum	Potamogeton crispus	Notes
112	45.92833	-89.42682	6	M	P			No Exotic
113	45.92851	-89.42681	6	M	P			
114	45.92869	-89.42681	6	M	P			No Exotic
115	45.92779	-89.42656	8	M	P		1	
116	45.92797	-89.42656	7	M	P			No Vegetation
117	45.92815	-89.42656	6	M	P		1	
118	45.92833	-89.42656	6	M	P			No Exotic
119	45.92851	-89.42656	4	M	P			No Exotic
120	45.92869	-89.42655	4	M	P			No Exotic
121	45.92779	-89.42631	7	M	P			No Vegetation
122	45.92797	-89.42630	7	M	P			No Vegetation
123	45.92815	-89.42630	6	M	P			No Vegetation
124	45.92833	-89.42630	4	M	P			No Vegetation
125	45.92851	-89.42630	4	M	P			No Exotic
126	45.92869	-89.42630	4	M	P			No Exotic
127	45.92721	-89.42490	7	M	P			No Exotic
128	45.92739	-89.42490	7	M	P			No Exotic
129	45.92757	-89.42490	7	M	P			No Vegetation
130	45.92720	-89.42464	7	M	P			No Exotic
131	45.92738	-89.42464	7	M	P			No Vegetation
132	45.92756	-89.42464	6	M	P			No Vegetation
133	45.92780	-89.43229	7	M	P			
134	45.92798	-89.43228	6	M	P			No Vegetation
135	45.92816	-89.43228	6	M	P		1	
136	45.92834	-89.43228	8	M	P			No Exotic
137	45.92780	-89.43203	7	M	P		1	
138	45.92798	-89.43203	7	M	P			No Vegetation
139	45.92816	-89.43202	7	M	P			No Vegetation
140	45.92834	-89.43202	6	M	P			No Exotic
141	45.92780	-89.43177	7	M	P			No Exotic
143	45.92798	-89.43177	6	M	P			No Exotic
144	45.92816	-89.43177	6	M	P			No Exotic
145	45.92834	-89.43176	9	M	P			No Exotic
146	45.92780	-89.43151	7	M	P		1	
147	45.92798	-89.43151	7	M	P			No Exotic
147	45.92816	-89.43151	6	M	P			No Vegetation
148	45.92834	-89.43151	6	M	P			No Exotic

Point Number	Latitude (Decimal Degrees)	Longitude (Decimal Degrees)	Depth (ft)	Sediment type	Rope (R); Pole (P); Visual (V)	Myriophyllum spicatum	Potamogeton crispus	Notes
149	45.92780	-89.43125	7	M	P			No Vegetation
150	45.92798	-89.43125	7	M	P			No Vegetation
151	45.92816	-89.43125	6	M	P			No Vegetation
152	45.92834	-89.43125	6	M	P			No Exotic
153	45.92779	-89.43102	7	M	P			No Exotic
154	45.92797	-89.43101	7	M	P			No Vegetation
155	45.93098	-89.43271	3	M	P	1		
156	45.93098	-89.43246	4	M	P			No Exotic
157	45.92323	-89.42900	5	M	P		1	
159	45.92341	-89.42900	7	M	P			No Exotic
160	45.92322	-89.42874	8	M	P			No Vegetation
161	45.92340	-89.42874	7	M	P			No Vegetation
162	45.92322	-89.42849	9	M	P			No Vegetation
163	45.92340	-89.42848	7	M	P			No Exotic
164	45.92267	-89.42805	6	M	P			No Exotic
165	45.92285	-89.42805	7	M	P			No Exotic
166	45.92267	-89.42779	6	M	P			No Exotic
167	45.92285	-89.42779	8	M	P			No Exotic
168	45.92267	-89.42754	8	M	P			No Exotic
169	45.92285	-89.42753	9	M	P			No Vegetation
170	45.92954	-89.43567	9	M	P			No Vegetation
171	45.92972	-89.43567	8	M	P			No Vegetation
172	45.92990	-89.43567	8	M	P			No Vegetation
173	45.93008	-89.43567	9	M	P			No Vegetation
174	45.92954	-89.43541	9	M	P			No Vegetation
175	45.92972	-89.43541	8	M	P			No Vegetation
176	45.92990	-89.43541	8	M	P			No Exotic
177	45.93008	-89.43541	9	M	P			No Vegetation
178	45.92953	-89.43516	8	M	P			No Vegetation
178	45.92971	-89.43515	9	M	P			No Vegetation
179	45.92989	-89.43515	8	M	P			No Vegetation
180	45.93007	-89.43515	8	M	P			No Vegetation
181	45.92953	-89.43490	9	M	P			No Vegetation
182	45.92971	-89.43490	8	M	P			No Vegetation
183	45.92989	-89.43489	8	M	P			No Vegetation
184	45.93007	-89.43489	8	M	P			No Vegetation
185	45.92971	-89.43464	8	M	P			No Vegetation

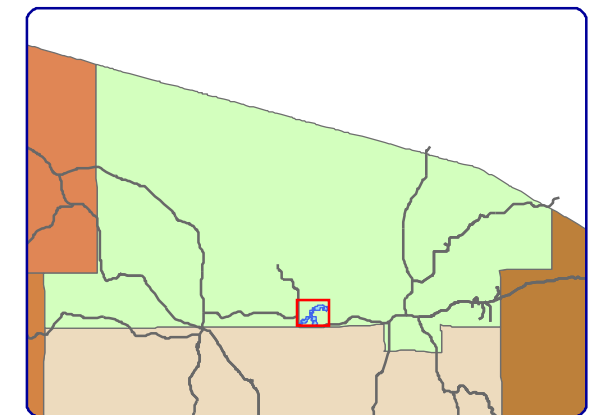
Point Number	Latitude (Decimal Degrees)	Longitude (Decimal Degrees)	Depth (ft)	Sediment type	Rope (R); Pole (P); Visual (V)	Myriophyllum spicatum	Potamogeton crispus	Notes
186	45.92989	-89.43464	8	M	P			No Vegetation
187	45.93007	-89.43463	8	M	P			No Vegetation
188	45.90545	-89.45337	8	M	P			No Exotic
189	45.90563	-89.45334	8	M	P			No Exotic
190	45.90581	-89.45330	8	M	P			No Exotic
191	45.90599	-89.45326	7	M	P			No Exotic
192	45.90616	-89.45322	7	M	P			No Exotic
193	45.90634	-89.45318	7	M	P			No Exotic
194	45.90189	-89.45629	5	M	P			No Exotic
195	45.90207	-89.45629	7	M	P			No Exotic
196	45.90225	-89.45629	6	M	P			No Exotic
197	45.90171	-89.45604	5	M	P			No Exotic
198	45.90189	-89.45604	5	M	P			No Exotic
199	45.90207	-89.45603	7	M	P			No Exotic
200	45.90225	-89.45603	8	M	P			No Exotic
201	45.90153	-89.45578	5	M	P			No Exotic
202	45.90171	-89.45578	6	M	P			No Exotic
203	45.90189	-89.45578	6	M	P			No Exotic
204	45.90207	-89.45578	7	M	P			No Exotic
205	45.90225	-89.45577	8	M	P			No Exotic
206	45.90152	-89.45552	6	M	P			No Exotic
207	45.90170	-89.45552	5	M	P			No Exotic
208	45.90188	-89.45552	6	M	P			No Exotic
209	45.90206	-89.45552	7	M	P			No Exotic
210	45.90152	-89.45527	6	M	P			No Exotic
211	45.90170	-89.45526	6	M	P			No Exotic
212	45.90188	-89.45526	8	M	P			No Exotic

Appendix A

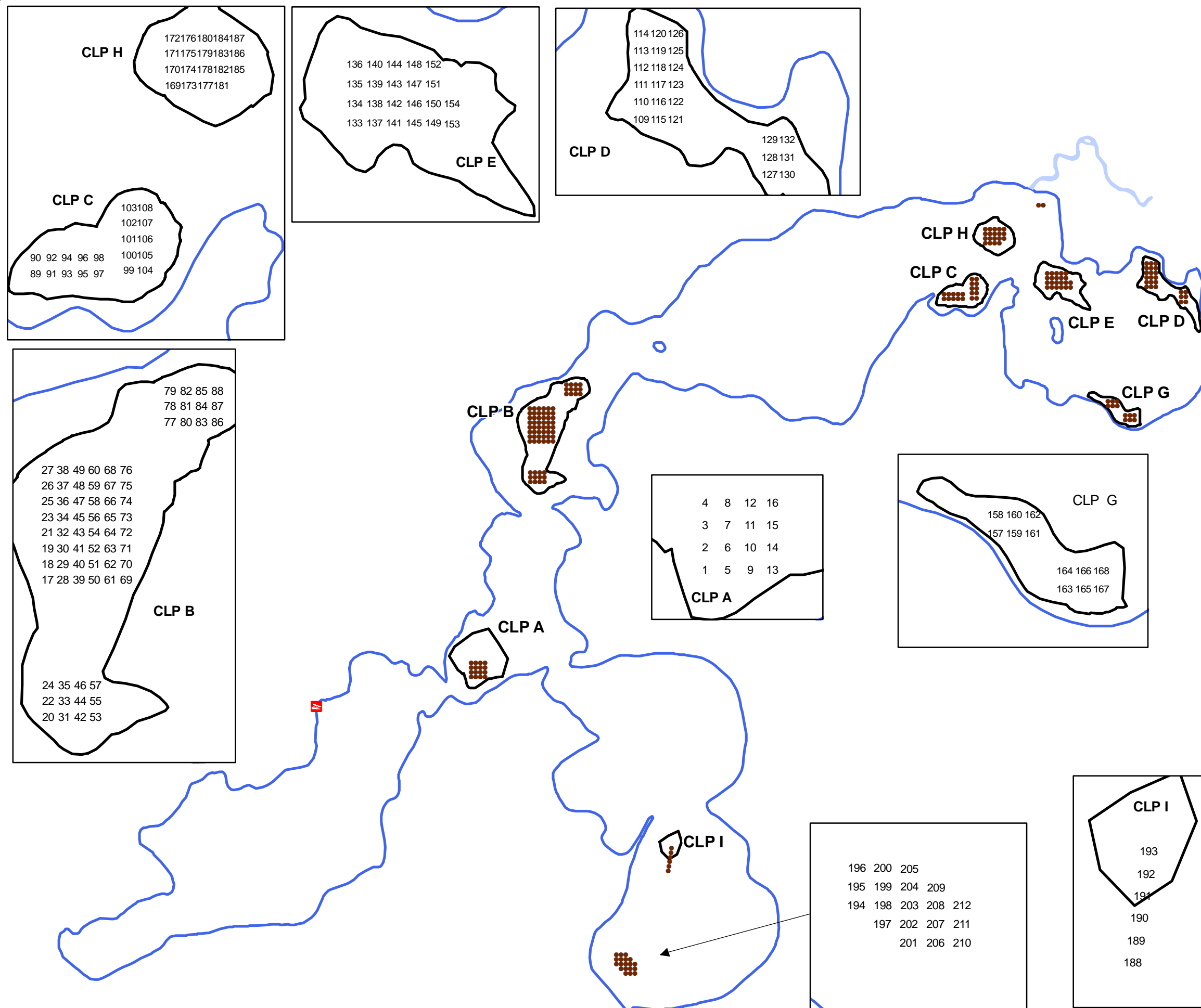
Little Saint Germain

Vilas County, Wisconsin

2009 Curly-Leaf Pondweed Treatment Point-Intercept Monitoring Locations



Extent of large map shown in red.



Legend

- # 2009 CLP Point-Intercept Location
- Public Access
- ⊃ 2009 Treatment Area

Sources:
Roads and Hydro: WDNR
Aquatic Plant Data: Onterra, 2009
Map Date: December 1, 2009



1,400
Feet

Number	2008 Site ID	Latitude (Decimal Degrees)	Longitude (Decimal Degrees)	Depth (ft)	Sediment type (M=muck, S=Sand, R=Rock)	Rope (R); Pole (P); Visual (V)	Myriophyllum spicatum	Potamogeton crispus	Ceratophyllum demersum	Elodea canadensis	Potamogeton praelongus	Potamogeton zosteriformis	Myriophyllum sibiricum	Potamogeton amplifolius	Potamogeton strictifolius	Najas flexilis	Nitella sp.	Potamogeton robbinsii	Potamogeton pusillus	Vallisneria americana	Potamogeton richardsonii	Nuphar variegata
1	A-08	45.91256	-89.46838	7	M	P	1		1		2	1		1								
2	A-08	45.91238	-89.46832	11	M	P											1					
3	A-08	45.91260	-89.46813	9	M	P	1		1	1	1											
4	A-08	45.91242	-89.46807	11	M	P			1		1		1			1	1					
5	A-08	45.91264	-89.46788	6	M	P			1	1	1	3	1	1		1						
6	A-08	45.91247	-89.46782	12		R				1			1		1		1					
7	A-08	45.91268	-89.46762	5	M	P	1		2	1		1	1	1								
8	A-08	45.91251	-89.46757	6	M	P			1		1	1	1		1							
9	A-08	45.91272	-89.46737	5	M	P			1	2	1			1								
10	A-08	45.91255	-89.46732	6	M	P	1		1	1	1	1	1	1		1						
11	A-08	45.91276	-89.46712	6	M	P			1	1	1	1	1			1				1		
12	A-08	45.91259	-89.46706	1	M	P			1	1		1	1			1						
13	B-08	45.90788	-89.47987	13		R	1		2			1										
14	B-08	45.90805	-89.47979	12	M	P			1		1		2									
15	B-08	45.90822	-89.47971	12		R			2				1									
16	B-08	45.90839	-89.47962	13		R			1				1				1					
17	B-08	45.90869	-89.47909	6	M	P			2	1	1	1	1							1		
18	B-08	45.90869	-89.47883	5	M	P			1	1	1	1	1						1		1	
54	I-08	45.90680	-89.45350	4	M	P	1		1	1		1						2				
55	I-08	45.90696	-89.45339	5	M	P			1			1						1				
65	N-08	45.93082	-89.43311	5	M	P				1							1					
67	N-08	45.93098	-89.43298	4	M	P			1	1												
68	N-08	45.93073	-89.43289	6	M	P			1	1												
69	N-08	45.93113	-89.43285	4	M	P			2	1												
70	N-08	45.93089	-89.43276	5	M	P			1	1												
71	N-08	45.93064	-89.43266	6	M	P			1													
72	N-08	45.93104	-89.43263	4	M	P	2		1													1
73	N-08	45.93080	-89.43253	4	M	P			2	1												
74	N-08	45.93095	-89.43240	4	M	P			1	1												
85		45.90865	-89.45812	5	M	P			2	1					1							
86	T-08	45.90883	-89.45812	5	M	P			2		1	1		1					1			
87	T-08	45.90901	-89.45811	5	M	P			1	3				1	1	1						
88	T-08	45.90919	-89.45811	5	M	P			1	3		1										
89		45.90864	-89.45786	6	M	P			1		2	1		1								
90	T-08	45.90882	-89.45786	6	M	P			2	1	1	1		1	1				1			
91	T-08	45.90900	-89.45786	5	M	P			2	1					1				1			
92	T-08	45.90918	-89.45786	5	M	P			3	1		1							1			
93		45.90864	-89.45760	5	M	P			1	1	2										1	
94	T-08	45.90882	-89.45760	6	M	P			1		1	1		1								
95	T-08	45.90900	-89.45760	5	M	P			1	3												

Number	2008 Site ID	Latitude (Decimal Degrees)	Longitude (Decimal Degrees)	Depth (ft)	Sediment type (M=muck, S=Sand, R=Rock)		Rope (R); Pole (P); Visual (V)	Myriophyllum spicatum	Potamogeton crispus	Ceratophyllum demersum	Elodea canadensis	Potamogeton praelongus	Potamogeton zosteriformis	Myriophyllum sibiricum	Potamogeton amplifolius	Potamogeton strictifolius	Najas flexilis	Nitella sp.	Potamogeton robbinsii	Potamogeton pusillus	Vallisneria americana	Potamogeton richardsonii	Nuphar variegata
96	T-08	45.90918	-89.45760	6	M	P										1		1					
97		45.90864	-89.45734	6	M	P			2	1		1											
98	T-08	45.90882	-89.45734	5	M	P			1														
99	T-08	45.90900	-89.45734	5	M	P			1														
100	T-08	45.90918	-89.45734	6	M	P			1	1		1			1								

Point Number	2009 Site ID	Latitude (Decimal Degrees)	Longitude (Decimal Degrees)	Depth (ft)	Sediment type (M=muck, S=sand, R=Rock)		Rope (R); Pole (P); Visual (V)	Notes	Myriophyllum spicatum	Potamogeton crispus	Ceratophyllum demersum	Elodea canadensis	Nitella sp.	Myriophyllum sibiricum	Potamogeton richardsonii	Potamogeton zostriformis	Potamogeton robbinsii	Najas flexilis	Potamogeton amplifolius	Potamogeton praelongus	Potamogeton pusillus	Vallisneria americana	Megalodonta beckii
1	U-09	45.91256	-89.46838	7	M	P														1			
2	U-09	45.91238	-89.46832	11	M	P				1	1				1			1					
3	U-09	45.91260	-89.46813	8	M	P				1	1			1				1		1			
4	U-09	45.91242	-89.46807	12	M	P					1												
5	U-09	45.91264	-89.46788	9	M	P				1	1				1	1		1					
6	U-09	45.91247	-89.46782	12	M	P	NV																
7	U-09	45.91268	-89.46762	7	M	P		1			1										1	1	
8	U-09	45.91251	-89.46757	8	M	P					1			1	1	1							
9	U-09	45.91272	-89.46737	5	S	P					1			1					1				
10	U-09	45.91255	-89.46732	8	M	P					1			1				1	1				
11	U-09	45.91276	-89.46712	5	R	P					1			1								1	
12	U-09	45.91259	-89.46706	9	M	P		1		1				1				1					
13	P-09	45.90788	-89.47987	5	M	P									2	1							
14	P-09	45.90805	-89.47979	8	M	P		2			1			1	1	1							
15	P-09	45.90822	-89.47971	7	M	P		1		1	1			2	1								1
16	P-09	45.90839	-89.47962	10	M	P				1	1	1	1	1		1						1	
17	P-09	45.90869	-89.47909	8	M	P					1	1		2									
18	P-09	45.90869	-89.47883	7	M	P				1	1			2	1	1							
54	Y-09	45.90680	-89.45350	6	M	P		1		1	2					1							
55	Y-09	45.90696	-89.45339	6	M	P				1	1					1	1						
65	A-09	45.93082	-89.43311	5	M	P	NV																
67	A-09	45.93098	-89.43298	3	M	P				1	1												
68	A-09	45.93073	-89.43289	5	M	P	NV																
69	A-09	45.93113	-89.43285	2	M	P		1		1				1									
70	A-09	45.93089	-89.43276	3	M	P				1	1												
71	A-09	45.93064	-89.43266	6	M	P	NV																
72	A-09	45.93104	-89.43263	3	M	P				2													
73	A-09	45.93080	-89.43253	4	M	P				2													
74	A-09	45.93095	-89.43240	3	M	P				2			1										
85		45.90865	-89.45812	5	M	P				1	1	1					1						
86	H-09	45.90883	-89.45812	5	M	P				1									1				
87	H-09	45.90901	-89.45811	4	M	P				1	1	1				1	1						
88	H-09	45.90919	-89.45811	5	M	P						1			1	1	1						
89		45.90864	-89.45786	5	M	P				1	1	1					1		1				
90	H-09	45.90882	-89.45786	6	M	P				1	1	3											
91	H-09	45.90900	-89.45786	5	M	P				1		1			1								

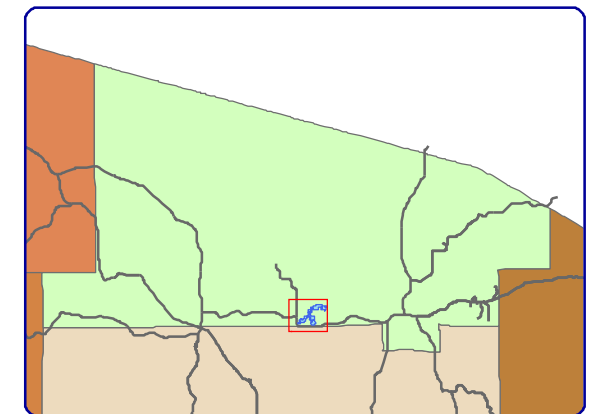
Point Number	2009 Site ID	Latitude (Decimal Degrees)	Longitude (Decimal Degrees)	Depth (ft)	Sediment type (M=muck, S=Sand, R=Rock)	Rope (R); Pole (P); Visual (V)	Notes	Myriophyllum spicatum	Potamogeton crispus	Ceratophyllum demersum	Elodea canadensis	Nitella sp.	Myriophyllum sibiricum	Potamogeton richardsonii	Potamogeton zostriformis	Potamogeton robbinsii	Najas flexilis	Potamogeton amplifolius	Potamogeton praelongus	Potamogeton pusillus	Vallisneria americana	Megalodonta beckii		
92	H-09	45.90918	-89.45786	5	M	P				1		1											1	
93		45.90864	-89.45760	6	M	P				1		1		1	1	2								
94	H-09	45.90882	-89.45760	6	M	P				1		2												
95	H-09	45.90900	-89.45760	6	M	P		1			1	1												
96	H-09	45.90918	-89.45760	5	M	P				1	1	1												
97		45.90864	-89.45734	6	M	P				1		2												
98	H-09	45.90882	-89.45734	6	M	P				1		2		1										
99	H-09	45.90900	-89.45734	6	M	P				1		1												
100	H-09	45.90918	-89.45734	6	M	P						2												

Appendix B

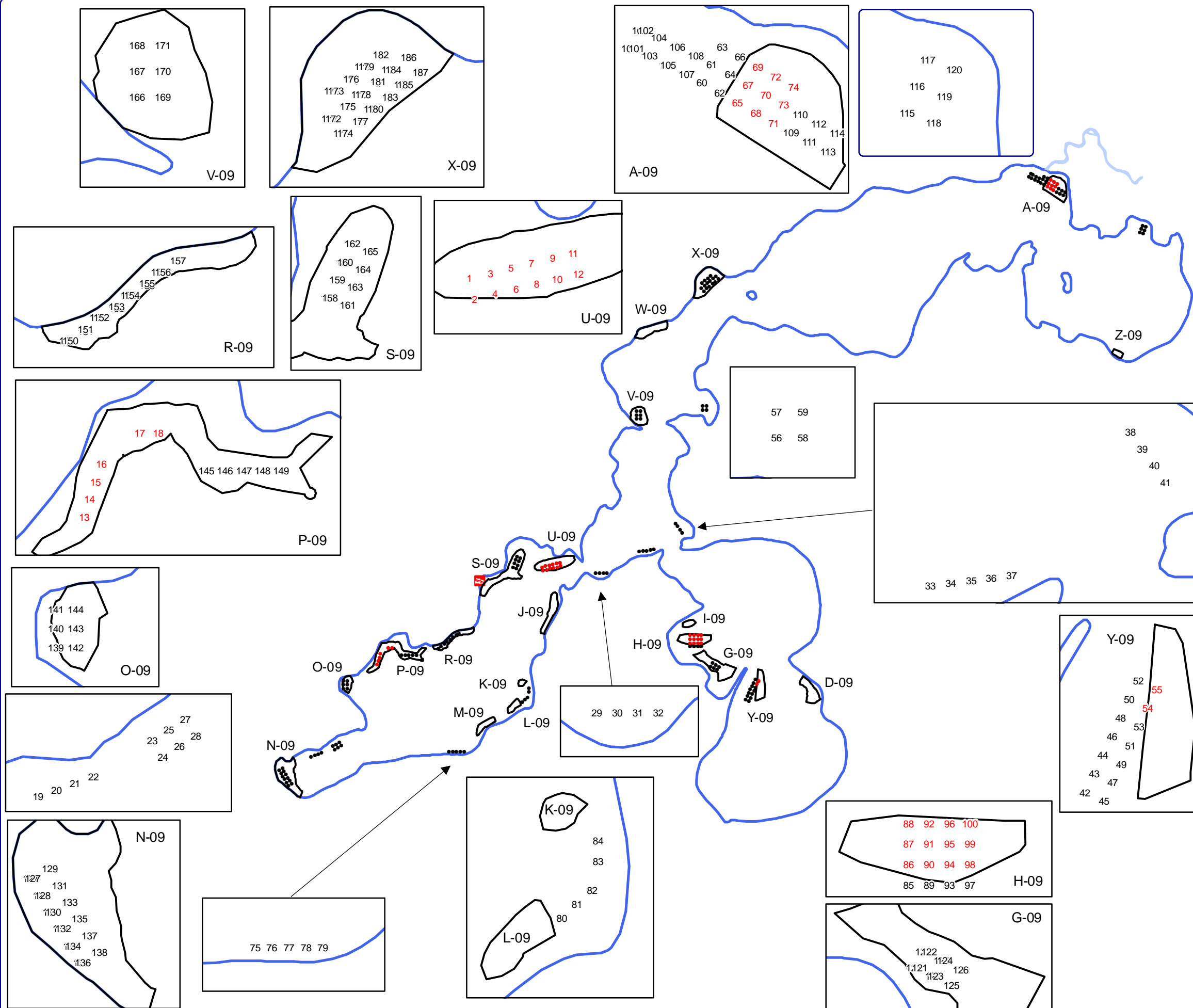
Little Saint Germain

Vilas County, Wisconsin

2009 Eurasian Water Milfoil Treatment Point-Intercept Monitoring Locations



Extent of large map shown in red.



Legend

- # 2009 EWM Point-Intercept Location
- # 2008 & 2009 EWM Point-Intercept Location
- Public Access
- ⊖ 2009 Treatment Area

Sources:
Roads and Hydro: WDNR
Aquatic Plant Data: Onterra, 2009

Map Date: December 1, 2009



1,750
Feet

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