Lake Metonga

Forest County, Wisconsin

Final Report: Aquatic Plant Studies 2005 & 2006

October 2006

Sponsored by:

Lake Metonga Association

&

Wisconsin Department of Natural Resources
Aquatic Invasive Species Grant Program

ACEI-001-05

Onterra, LLC
135 South Broadway Suite C
De Pere, WI 54115
920.338.8860
www.onterra-eco.com

Onterra, LLC
Lake Management Planning

Lake Metonga

Forest County, Wisconsin

Final Report: Aquatic Plant Studies 2005 & 2006

October 2006

Created by: Eddie Heath & Tim Hoyman
Onterra, LLC
De Pere, WI

Sponsored by: Lake Metonga Association
Wisconsin Dept. of Natural Resources (ACEI-001-05)

Acknowledgements

This management study effort was truly a team-based project and could not have been completed without the input of the following individuals:

Lake Metonga Association
Mr. Lester Schramm

Wisconsin Dept. of Natural Resources
Mr. Kevin Gautheir
Mr. Frank Koshere

INTRODUCTION

The Lake Metonga Association (LMA) contacted Onterra after the group successfully applied for a Wisconsin Department of Natural Resources (WDNR) Planning Grant. The project scope had two main components; one focusing on aquatic invasive plants and the other on native aquatic plants. Onterra was contracted to perform a pretreatment Eurasian water milfoil (*Myriophyllum spicatum)* survey to help the LMA determine a chemical treatment strategy (2005) and follow up with two post treatment surveys (August 2005 and late spring 2006). When the LMA decided to treat again in 2006, a pretreatment survey and two post treatment surveys were added to better understand the Eurasian water milfoil in the lake. The original project scope included a comprehensive plant survey which consisted of a curly-leaf pondweed (*Potamogeton crispus*) survey, a point-intercept survey (150 meter resolution, 156 points), and a community mapping survey. The original 150-meter resolution (156 points) of the point-intercept survey from the project scope was changed due to new guidance from the WDNR to an 80-meter resolution (1311 points).

RESULTS AND DISCUSSION

Non-native Aquatic Plants

The LMA was primarily concerned with two plants, Eurasian water milfoil (EWM) and curly-leaf pondweed (CLP). CLP was not known to exist in the lake, but EWM was on the forefront of the association's concerns. Less Schramm provided Onterra with a sketched map depicting 6 EWM colonies along with their respective estimated size which were thought to total 0.73 acres

Curly-leaf Pondweed

Curly-leaf pondweed is a European exotic first discovered in Wisconsin in the early 1900's that has an unconventional lifecycle giving it a competitive advantage over our native plants. Curly – leaf pondweed begins growing almost immediately after ice-out and by mid-June is at peak biomass. While it is growing, each plant produces many turions (asexual reproductive shoots) along its stem. By mid-July most of the plants have senesced, or died-back, leaving the turions in the sediment. The turions lie dormant until fall when they germinate to produce winter foliage, which thrives under the winter snow and ice. It remains in this state until spring foliage is produced almost immediately following ice-out, giving the plant a significant jump on native vegetation. Curly-leaf pondweed can become so abundant that it hampers recreational activities within the lake. Furthermore, its mid-summer die back can cause algal blooms spurred from the nutrients released during the plant's decomposition.

A meander survey was completed on June 23, 2005 in search of this invasive plant. No CLP was observed during this study and it was concluded that CLP was most likely not present in the lake and if it was present, it was at an undetectable level. In August 2006, there were reports of CLP being observed floating at one of the boat landings by Clean Boats Clean Waters inspectors, but its location in the lake has not been discovered.

Eurasian Water Milfoil

Eurasian water-milfoil is an invasive species, native to Europe, Asia and North Africa, that has spread to most Wisconsin counties. Eurasian water-milfoil is unique in that its primary mode of propagation is not by seed. It actually spreads mostly by shoot fragmentation, which has

supported its transport between lakes via boats and other equipment. In addition to its propagation method, Eurasian water-milfoil has two other competitive advantages over native aquatic plants; 1) it starts growing very early in the spring when water temperatures are too cold for most native plants to grow, and 2) once its stems reach the water surface, it does not stop growing like most native plants, instead it continues to grow along the surface creating a canopy that blocks light from reaching native plants. Eurasian water-milfoil can create dense stands and dominate submergent communities, reducing important natural habitat for fish and other wildlife, and impeding recreational activities such as swimming, fishing, and boating.

2005

Pretreatment Assessment (5/9/2005)

As stated earlier, a sketched map of 6 sites was provided by Mr. Les Schramm of the LMA. This map was digitized and given attributes using Geographic Information Systems (GIS) software. Placing a GPS waypoint in the center of each area, we navigated to each location. The purpose of the survey was to determine accurate extents of these focus areas for the LMA to determine chemical treatment options based on our recommendations. Resulting treatment sites were labeled and are shown on Map 1. The weather conditions at the time of the survey included light to moderate rain and a 10-15 mph wind from the west.

Site 1 According to notes made by Les, the area was presumed to be 120 by 60 feet (about 0.17 acres). Directly south of the public beach and boat launch area on the north side of the lake, EWM was easily spotted in 7-10 feet of water with plants growing to about 6 feet from the substrate. Two large colonies (density of 90% aerial coverage) were mapped using polygons and several points were taken on smaller colonies or isolated clumps of plants. A treatment area of 4.2 acres was recommended.

Site 2 This area was presumed to be 130 by 40 feet (about 0.12 acres). This estimation was fairly accurate. The EWM appeared to be most dense (80-90% aerial coverage) on the 8-9 foot contour and its extents were limited on two sides by depth. A treatment area of 0.1 acres was recommended.

Site 3 This area is directly lakeward from Strawberry Point, and estimated to be 80 by 30 feet (about 0.06 acres). In this area, EWM grew to a depth of approximately 14 feet. The EWM was about 7 feet tall and difficult to see from the surface without the aid of an Aqua Scope. Many GPS points were taken in an attempt to mark the extents of the colony. The density of this large colony was 50-100% aerial coverage and a two-part treatment area of a combined 8.0 acres was recommended.

Site 4 Les estimated this colony was 100 by 40 feet (0.09 acres). To allow Les to gain an understanding of the mapping process, he was asked to observe the process from our boat. EWM densities were 80-100% aerial coverage in this colony and it was mapped using a polygon. The plants were easily observed from the surface in 8 feet of water. A 1.2 acre treatment area was recommended for the densest areas. Scattered plants were observed to the north and south of the recommended area but were not considered abundant enough to warrant a chemical treatment.

Site 5 The EWM colony was originally thought to be 240 by 40 feet (about 0.22 acres). A very dense (100% aerial coverage) colony was mapped with a polygon. This colony appeared relatively isolated and growing in about 8 feet of water. The plants were highly visible from the surface, roughly 6 feet tall. A treatment area of 0.4 acres was recommended.

Site 6 The area directly north from the Forest County Memorial Park and south boat launch was thought to be 80 by 40 feet (about 0.07 acres). A dense area was observed in about 8-9 feet of water surrounded by a bit more scattering of plants. A 1.1 acre treatment area was recommended that included the entire colony, and the sparse occurrences due to the area being located in one of the highest traffic areas of the lake.

Post Treatment Assessment I (6/23/2005)

Previous to the visit, 14.9 acres of EWM was chemically treated by Aquatic Biologists on May 24, 2005. The reason for the site visit was to perform the CLP survey, but since we were on the lake, we also checked out the six treatment areas for EWM. The weather conditions were favorable, 80ºF and mostly sunny. There was a southwest wind around 10 miles per hour that made observing submersed plants more difficult in some areas. The visits to the treatment areas lead us to the concern that the EWM treatment efforts were not effective. Laura Herman from the WDNR was contacted and it was agreed that she would meet with Less Schramm and Jim Goheen (Chemical applicator from Aquatic Biologists) at a later date. On June 27, 2006 these parties visited site 3, directly in front of Les's house, and it was concluded that the treatment was not successful and there was no clear reason. Also during the CLP survey, many new EWM locations were marked to aid in the understanding of the infestation. EWM was observed at this time to be reaching the surface and canopying to some degree. Many additional large colonies were also observed and mapped using a combination of polygons and point extents.

Post Treatment Assessment II (8/11/2005-8/12/2005)

This post treatment survey was conducted after the point-intercept plant study was completed. During that study, many additional EWM locations were recorded on the lake including some large, dense colonies. The weather was warm and bright with the wind picking up in the afternoons. The results are presented in text below and summarized in Table 1.

Site 1 Plants were observed in this area very near the surface. One area appeared to have wilted plants, but the other areas yielded only healthy EWM with some plants canopied. Overall the treatment did not look as if it adversely affected the plant. Many new plants were observed in the area including a very large colony directly to the east of Site 1. The area was considered of high concern and Tim Hoyman dove the site on the last day to better determine the colony's extents. This new colony was isolated from Site 1 with only scattered plants in between.

Site 2 At this site, EWM was observed and thought to look very similar to past visits. Much EWM was observed to the north and south of the site along the 8 foot contour line. The treatment did not yield significant impacts in this site.

Site 3 This area was highly infested with EWM. Plants were observed almost reaching the surface. The site was surveyed later in the day when the wind had calmed down and visibility was high. Upon finishing a detailed evaluation of the colony's boundaries and conditions, the area was designated to be dived the following day. Tim dove the area north to Site 2 and south to site 4. Treatment effects were not observed in this area.

Site 4 There was much EWM around the site, but it the large colonies that made up the treatment site had EWM that appeared limp and covered with filamentous algae. Much native milfoil was observed in the area.

Site 5 Similar to site 4, much EWM was observed in the vicinity of the site, but the original colony appeared to have been affected. Plants observed in the treatment area were bent over and covered with filamentous algae.

Site 6 Plants were observed in this area about 1-2 feet from the surface in about 9.5 feet of water. It was unclear if the treatment had an effect in the area. Some plants appeared as if they may have been wilting while others appeared quite healthy.

2005 Conclusions

The WDNR, Aquatic Biologists Incorporated (ABI), LMA, and Onterra all concluded that the 2005 treatments were largely ineffective. Aquatic Biologists agreed to retreat the unsuccessfully treated areas (Site 1-6) at the same concentration at no cost to the LMA. However, no guarantees to the success of the repeat treatment were made due the company's assumption that the dose of the chemical may not have been high enough in this situation. Onterra, the WDNR, and the LMA agreed that the original concentration of 100 lbs per acre be used again on these sites. The decision was based on the fact that 100 pounds per acre seemed adequate during previous applications as well as on other lakes. Using the culmination of EWM data from all previous studies, it was recommended that additional areas be treated on the lake. Using GIS software, 12 additional focus areas (12.9 acres) were created with the intent of refinement after the pretreatment assessment was completed. The LMA applied for chemical application permits for 2006 based on 27.8 acres (14.9 acres to be retreated and an additional 12.9 acres).

2006

Pretreatment Assessment (5/10/2006)

18 sites, including the original 6, were surveyed to evaluate the EWM and refine treatment options. All existing EWM polygons and points were loaded into the GPS unit along with the treatment area polygons. This provided an accurate, real-time account of our location relative to treatment areas and past EWM colonies while on the water. The conditions of the survey were mostly cloudy, cold, and a slight breeze. The water temperature was 50.2°F. Much EWM was observed. New areas were noted as well as the expansion of existing colonies. Many areas that were previously too scattered to map using polygons were now easily mapped in that fashion.

After the survey was preformed, Onterra recommended that only 13.36 acres of the original 14.9 be retreated this year because it appeared that there was an effect on the EWM in two areas. The other 12 areas were refined from 12.9 acres to 13.1 acres. Some of the areas were expanded and others were reduced. Also, an additional 1.9 acres of recommended treatment area were added totaling 28.4 acres to be treated in May 2006.

Site 1 Both of the existing colonies located in this site were very dense (approaching 100% aerial coverage). The northwestern colony expanded much to the north and was mapped using a polygon. Plants were observed 2 feet from the surface in 8 feet of water. Since the treatment had no effect on the colony, it was recommended that the treatment be repeated and the northern expansion be treated as well.

Site 2 This colony's location was confirmed. Plants were observed very similar to past visits: low growing and along the 8 foot contour. Very dense and expansive colonies were mapped to the north and south. The original area was recommended to be retreated and additional treatment areas were added to the north and south.

Site 3 The northern part of this site had moderately dense EWM (aerial coverage 60-75%) in most areas with a few areas being denser. The plants were growing out to 14 feet of water and were only visible from the surface using an Aqua Scope or submersed video. The lower part of the site was considerably more dense including one area that was arguably the most dense colony in the lake. This area was recommended to be retreated.

Site 4 This area had very sparse EWM plants. There were considerably more plants located on the eastern edge in an area just outside of the treatment area. It was recommended that this site not be retreated since the original treatment appeared to successfully impact the colony including the current year's plant growth. However, additional treatment areas around the site were recommended.

Site 5 There were very few plants observed in this site. Also, very few plants were observed in the vicinity of the site. It was concluded that the treatment also had a positive effect and a repeat treatment was not justified. Adjacent colonies were recommended for treatment.

Site 6 The EWM colony appeared healthy in this area and many scattered plants were observed surrounding the treatment area. Areas that were previously observed to be moderately dense were now indistinguishable from the more dense portions of the area. This site was recommended for repeat treatment. A large colony of EWM was located to the east of this area just outside the campground's swimming area. The densest portion of this colony was recommended for treatment and future monitoring will be needed.

Site 7 A half-acre square treatment area was originally devised for this site. Based upon the 2005 surveys, EWM was most dense (aerial coverage of 90-100%) in this area but was found to extend to the east (aerial coverage of 50-75%). The square treatment area was refined into a rectangle of about 1.2 acres. There were scattered plants extending northeast along this contour band and is recommended for future monitoring.

Site 8 Located directly west of the boat landing on the east side of the lake, a heavy colony of EWM (approaching aerial coverage of 100% and canopying) was mapped during the comprehensive survey. During the current study, the colony was re-mapped. The polygons from the two surveys were almost identical showing little change in colony size. An area of 0.8 acres was recommended for treatment.

Site 9 This area of infestation occurs between the 7 and 13 foot contour. The colony extents were verified. The treatment area was originally given a 0.7-acre rectangle and was revised to a slightly different shape of roughly the same acreage.

Site 10 EWM was moderately dense in this area (50-75% aerial coverage) with scattered plants observed outside of the initial treatment area. The area was revised from about a half an acre to 1 acre to include the scattered plants located outside the main colony.

Site 11 The extents of this area were almost entirely accurate. EWM in this area is most dense (80-90% aerial coverage) in the western portion of the treatment area. 1.8 acres of chemical treatment was recommended for this site.

Site 12 Partially located in the swimming area of the Crandon Municipal beach and boat landing, this EWM colony is very dense (90-100%). This area is of concern because its proximity to the boat landing and its encroachment on a recreational area. The area was only partially mapped during the comprehensive plant survey because the beach area was in use. The colony was remapped and appeared that it expanded quite a bit from the previous year. This

treatment area was expanded from 0.8 acres to 1.7 acres. Additional plants were observed to the east and will need future monitoring.

Site 13 This EWM colony is growing on a steep ridge in approximately 7-10 feet of water. Plants were observed in this area, but since this colony is so limited by depth, it was recommended to give priority to other colonies and not treat the site at this time.

Site 14 There is one large EWM colony (80-90% aerial coverage) that is contained within this treatment area. Scattered EWM is located throughout the site and the initial 2.01 acre treatment area was recommended.

Site 15 The site appeared similar to past surveys and the 1.63 acre treatment recommendation was accurate. This site contained one dense colony (90% aerial coverage) and many other scattered plants.

Site 16 This site is located in Strawberry Bay to the south of Site 3. The EWM was scattered with larger clumps of roughly 10 ft in diameter. Although this area is not as dense as some, the 1.11 acres are recommended for treatment to keep the area around Site 3 under control.

Site 17 As noted earlier, much EWM was observed surrounding Site 5. A few 40 foot diameter colonies of EWM were observed almost reaching the surface. It was recommended that all 1.24 acres of the focus area be treated.

Site 18 This colony was located in the deepest water of any known colony on the lake and was not visible from the surface. A combination of submersed video and buoy placement was used in an attempted to delineate the extents of the colony. This method did not sufficiently work in this situation and it was determined that future studies and alternative methods (scuba) will be needed to understand this colony's extents. Priority was given to other EWM colonies and this site was not treated.

Sites 19-23 These sites were all added after the pretreatment survey and totaled 1.93 acres. These areas were selected for treatment because they had dense (75-80% aerial coverage) colonies of EWM with distinct boundaries. Site 19 is located directly lake ward from a large resort area. High boat traffic in this area could increase fragmentation of EWM and increase its ability to spread.

Post Treatment Assessment I (6/30/2006)

The survey was to qualitatively evaluate the EWM treatments that were completed by Schmidt's Aquatic Plant Control and Aquatic Biologists, Inc. on May 15-18, 2006. All treatment sites were visited during the 8-hour survey. Submerged video was shot using scuba at sites 1, 3, and 12. These sites were also videoed before the treatments occurred in mid May 2006. The video will be made available when time permits. Conditions during the site visit were nearly perfect with partly cloudy skies and little wind. The results of the treatments were largely inconclusive at the time of the survey and a second post treatment survey was deemed necessary.

Sites 2, 3, 6, 7, 14, 15, 16, 17, and 19 These sites all showed very good results because little or no EWM was found. The EWM that was seen was very limp and collapsed. Most of these sites also had good occurrence of native plants. Some sites, such as 2 and 15, had a great deal of native milfoils, indicating that the timing of the treatment was good and minimized the impact on these important plants.

Site 11 Overall this site appeared that the chemical treatments were affective, but we did locate some standing, limp EWM. It was presumed that these plants would show more affects later in the summer.

Sites 1, 8, 9, 10, 12, 20, 21, 22, and 23 These sites showed mixed results. In all of these sites, a great deal of EWM was found, but rake tows indicated much leaf-burn, some adventitious root development, and the plants were very limp. It was obvious that the treatment had an impact and likely slowed or stopped the growth of the EWM; however, is not known why these plants hadn't fallen over and it is hoped that they would later in the season.

Post Treatment Assessment II (8/15/2006)

During this survey, all 19 treatment sites were visited along with the 4 sites that were not treated. From our experience on many other lakes during 2006, EWM growth was quite high and Lake Metonga was no exception. Much EWM was observed on the lake and many new colonies were mapped. During the survey, the conditions were 70˚F, sunny and a light breeze. The results are presented in text below and in Table 1.

In the interest of clarity, the following qualitative terms are used in describing the treatment results on a site-by-site basis:

Good This term is used on sites that an obvious decrease in EWM density was observed following the treatment. For example, areas containing a dense colony that were found to have only a few scattered plants or only a few clumps of EWM were considered to have good results.

Moderate Sites with this determination showed treatment results in one of two ways. Some sites were found to have a decrease in EWM density, but healthy plants remained to some extent. At some sites, there was not a clear decrease in density, however, the plants that remained were obviously impacted because they were found to be limp and have an unhealthy appearance.

Poor This term is used for sites that had very little, if any, apparent treatment results. In these sites, there was not a decrease in apparent EWM density and the majority of the plants appeared to be thriving.

Mixed Sites with this determination were found to show a combination of the above terms. For instance, a large site may have a portion showing good results because very little EWM was found in it; however, in a different portion standing plants were found that may have had a healthy (poor result) or unhealthy (moderate result) appearance.

Site 1 *Site-wide Effect: Moderate.* Although some areas had a successful reduction in EWM density, others areas within the site had EWM that appeared healthy. This rectangular treatment site could be refined to a slightly different shape to make future treatments more efficient.

Site 2 *Site-wide Effect: Good.* Much northern water milfoil was observed in this area with only 1 small clump of EWM.

Site 3 *Site-wide Effect: Good.* This large, 2-part treatment area showed good results. The northern portion of the treatment area was virtually free from EWM. The southern portion had scattered EWM but no distinct colonies including the dense colony mapped in August 2005. The density of the EWM in this area was greatly reduced.

Site 4 This site was not treated in 2006. Almost no EWM was observed in or around this site.

Site 5 This site was not treated in 2006. No EWM was observed in this site.

Site 6 *Site-wide Effect: Good.* This colony appeared much reduced from past surveys. One heavy (aerial coverage 80 %) EWM colony still exists but the rest of the treatment area was virtually free from EWM.

Site 7 *Site-wide Effect: Good.* The EWM colony in the treatment area was greatly reduced in size and density. The EWM that was observed was low-growing. Many native plants were observed in this treatment area.

Site 8 *Site-wide Effect: Good.* Although the entire area was scattered with EWM, this is a distinct reduction from the previous year. Many natives were also observed in this area.

Site 9 *Site-wide Effect: Poor.* Some areas of this site had limp EWM but most of the EWM appeared healthy. The EWM was growing in 7-9 feet of water and was roughly 3 feet from the surface.

Site 10 *Site-wide Effect: Mixed.* Many scattered plants were observed growing low and bent over, but a 40 foot diameter dense colony (aerial coverage 90%) was observed in the western part of the treatment area. These plants appear healthy and approaching the surface.

Site 11 *Site-wide Effect: Good.* There was very little EWM observed in this site and the plants that were observed appeared to be impacted by the treatment.

Site 12 *Site-wide Effect: Moderate.* This site had much EWM and it was unclear how much of it was adversely affected by the treatment. EWM appeared to be less dense and did not reach as close to the surface. However, it appeared that this colony grew substantially to the east along the 7-9 foot contour and is an area that will need future monitoring.

Site 13 This site was not treated in 2006 and the colony appeared similar to past surveys. Plants were located and tightly hugged the 7-10 foot contour which is very steep and narrow.

Site 14 *Site-wide Effect: Good.* Much of this area was clear of EWM. One 10 foot diameter clump was observed in the center of the treatment area and had standing plants.

Site 15 *Site-wide Effect: Good.* There was almost no EWM observed in or around this site.

Site 16 *Site-wide Effect: Good.* Almost no EWM was observed in the site.

Site 17 *Site-wide Effect: Good.* Very few plants were observed in this site.

Site 18 Site 18 was not treated in 2006 and this site was not evaluated during this site visit.

Site 19 *Site-wide Effect: Good.* This site was added after the spring pretreatment survey and had a large, dense colony. This visit yielded almost no EWM and it appears that the treatment was quite effective.

Site 20 *Site-wide Effect: Good.* The EWM was very scattered in this site. Some areas had no EWM and the areas that EWM was present appeared limp and bent over.

Site 21 *Site-wide Effect: Good.* The EWM was almost entirely gone in this site. Only a thin band of low-growing EWM existed in 7 feet of water.

Site 22 *Site-wide Effect: Moderate.* There was some EWM standing in this site but it was completely covered with filamentous algae.

Site 23 *Site-wide Effect: Moderate.* EWM was not observed in some parts of the treatment site but in others it appeared quite healthy aside from being covered with filamentous algae.

Table 1. Eurasian Water Milfoil Treatment Summary.

Site	First Mapped	2005 Treatment Acreage (May 24, 2005)	2005 Treatment Results	2006 Treatment Acreage (May 15, 2006)	2006 Treatment Results	Notes
1	May 2005	4.15	Ineffective	4.15	Moderate*	*Some reduction in density but healthy EWM observed
2	May 2005	0.11	Ineffective	0.11	Good	
3	May 2005	3.98	Ineffective	7.98	Good*	*Northern portion relatively free of EWM, southern portion has density much reduced but scattered plants
4	May 2005	4.00	Ineffective*	Not Treated		*Treatment later shown to have an effect
5	May 2005	1.20	Ineffective*	Not Treated		*Treatment later shown to have an effect
6	May 2005	0.36	Ineffective	1.11	Good	
7	August 2005			1.23	Good	
8	August 2005			0.78	Good	
9	August 2005			0.67	Poor*	*Only limited treatment effects observed
10	August 2005			1.00	Mixed*	*Eastern part effective, EWM in western part appeared healthy
11	August 2005			1.78	Good	
12	August 2005			1.65	Moderate*	*Density reduced in much of area but some healthy plants
13	June 2005			Not Treated*		*Priority given to other areas
14	June 2005			2.01	Good*	*Only 1 small colony observed
15	May 2005			1.63	Good	
16	May 2005			1.11	Good	
17	August 2005			1.24	Good	
18	May 2005			Not Treated*		*Colony in deep water and priority given to other colonies
19	May 2006			0.48	Good	
20	May 2006			0.30	Good*	*Highly scattered EWM observed but limp and bent over
21	May 2006			0.60	Good	
22	May 2006			0.30	Moderate*	*Some EWM observed covered with filamentous algae
23	May 2006			0.25	Moderate*	*Some EWM observed covered with filamentous algae

2006 and Project Conclusions

Determining the success or failure of chemical treatments on EWM is often a difficult task because the criteria used in determining success or failure is ambiguous. Most people involved with EWM management, whether professionals or laypersons, understand that the eradication of EWM 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. However, great uncertainty lies within what "control" actually means. Does control mean that an area does not require treatment for "X" number of years? Is it that an area once dense with EWM has only a few clumps remaining that require treatment the next season? Or is control actually stopping the spread of EWM and thus, keeping it from infesting other areas of the lake? More than likely, it is actually a combination of these concepts.

In addition to the factors above, the determination is also perplexed by whether the treatment results should be considered on a lake-wide or site-by-site basis. Much of the information contained within this report describes the treatment effects by site, but we also need to consider the control that is being achieved in Lake Metonga as a whole. The site-by-site conclusions are discussed below and are followed by a discussion of the project on a lake-wide basis.

Following the treatments completed in May 2005, it was quite apparent during the late summer of that year that the treatments were not a success because on a site-by-site basis, relatively the same amount of EWM was found following the treatments as occurred before the treatments. This determination is clouded by the fact that two of the sites (Sites 4 and 5) were found to be nearly free of EWM during the May 2006 pretreatment survey. The cause of the ultimate success of treatments in some areas and failure in the others is unclear. However, specific to the successes of Sites 4 and 5, one possibility may be that the herbicide treatment inhibited the EWM's ability to build sufficient carbohydrate stores within their root-crowns to support the following year's new growth. Although the EWM remained during the 2005 growing season, it was not able to regenerate the following year.

In May 2006, just over 28 acres of EWM was treated. On a site-by-site basis, 72% of the acreage was found to have good results, while 22% was considered to have moderate results and 4% showed mixed results. The remaining acreage (2%) was found to have poor results. Again, as with the 2005 treatments, the reasons as to why some of the areas would not be considered a success are unknown. For instance, Site 10, a relatively small site at 1-acre, showed good results in one portion by having virtually no EWM, but the remaining areas showed healthy growth. Site 9, on the same side of the lake, but in deeper water (contours on Map 1 are not entirely correct) showed essentially no treatment effects. However, Sites 8 and 20, again on the same side of the lake, showed good results by having very little EWM.

Although the vast majority of the treated acreage showed good results, the most profound failures were found in Sites 1, 12, and 23. In all of these sites, the density of EWM was reduced slightly, but a large portion of each site was found to contain substantial EWM growth. The common thread among these three sites was the difficulty we found in determining there actual extents over the course of the project. During each visit, these sites appeared to be expanding in size (acreage) and in density; therefore it is likely that not all plants making up the actual colony were treated. As a result, the effects of the treatments may have been masked by new and expanded growth originating from the untreated areas. Possibly, the sites that were considered a failure following the 2006 treatments will have a delayed response much as Sites 4 and 5 did after the 2005 treatments.

On a lake-wide basis, it is apparent that the EWM is not currently under control in Lake Metonga; therefore, if the control project were to end at this time, it would have to be considered a failure. On a lake-wide basis, the treatments of 2005 obviously failed. However, the treatments of 2006 would be considered a success because most of the treated acreage was positively impacted by the treatments. As described above, 72% of the acreage treated was found to have good results on a site-by-site basis. Much of the acreage in the sites considered as "moderate" or "mixed" also showed good results, if that acreage is also taken into account, on a treatment-wide basis, the acreage considered as "good" would likely exceed 80%. Therefore, the treatments, on a lake-wide basis would be considered a success. However, as described below, additional areas containing EWM were discovered during the 2006 surveys. Many of these areas would be considered treatable because of their density, while others are more scattered occurrences and will require continued monitoring. Based upon the behavior of the EWM in other areas of the lake, we can expect the densest areas to expand; therefore including these areas in future treatments is essential to achieving lake-wide control of EWM.

Future Monitoring Needs

Continued monitoring of EWM on all known past and present treatment sites will be needed on Lake Metonga. During the 2006 post treatment surveys, new EWM colonies were observed and some existing colonies appeared to have expanded. Not all of these areas are fully understood and should be monitored to determine if future management actions will be needed.

During the June 2006 survey, a large and dense (80-90% aerial coverage) colony was mapped in the northwest part of the lake north of Site 13 (Map 1). This area was revisited in August 2006 and this colony was observed as well as a narrow band of scattered EWM south of this colony including Site 13 and east of the colony in 7-10 feet of water throughout the littoral zone of the northwestern bay. This is a definite area of concern and may warrant immediate management actions.

Site 12 is another area of concern. This colony appears to have expanded to the west and east. Although the eastern and southern extent of this site does not fully connect with Site 11, it appears that without management actions, the entire littoral zone of the bay that contains the public boat launch, swimming area, and fishing pier could become dominated by EWM.

Although treatment effects seemed promising in sites 17 and 19, scattered EWM clumps were observed between these sites and in some spots appeared relatively dense.

Site 18 is an area where EWM was observed growing in deep water (14 feet or greater) and was not visible from the surface. Although this colony does not pose any significant navigational or recreational problems, it is important to understand the colony in terms of the native plant communities it is displacing. Whether a chemical treatment is justified is unknown, but monitoring of this site may provide answers to this question.

Although the treatment in Site 7 was effective, EWM appeared to have spread from this colony to the northeast along the 7-9 foot contour about 1,000 feet past the extents of Site 7. Isolated plants and clumps of plants were also observed much farther counter-clockwise around the lake and were even observed in the eastern bay locally known as "Peterson Bay."

2007 Proposed Eurasian Water Milfoil Treatments

Eurasian water milfoil continues to threaten the stability of the Lake Metonga ecosystem. Although past chemical treatments have not proven to be the *silver bullet*, promising results have been documented. Determining treatment success or failure on Lake Metonga has been difficult task. In some cases, treatment success did not manifest in the same year the treatment occurred and some possible reasons for this have been explained. In 2006, Onterra performed a pretreatment survey with the intent of refining permitted treatment areas to accurately correspond with the EWM extents at that time. At the time of the pretreatment survey, delayed treatment success was observed when two of the 2005 treatment sites were found to be relatively free of EWM and were not recommended for treatment. Also, many additional areas were observed that warranted chemical treatment and some of these areas were designated for treatment. All additional areas were not treated due to treatment acreage limitations stated in the conditional permit. This is because chemical application permits need to be completed in advance of the pretreatment study. Although treatment extents can be slightly modified, total permit acreage cannot be exceeded. In 2006, there were additional sites that may have been appropriate for treatment, but priority was given to other sites in order to stay under the total acreage of the conditional permit. Overall, the pretreatment survey proved to be an appropriate management tool to limit chemicals from being used where they would not be effective as well as accurately targeting the most threatening EWM at the time of the survey.

This approach is recommended for 2007; however, all *focus areas* (Map 3) should be considered for treatment. Therefore, a total 44.0 acres should be applied for in the conditional treatment permit. The focus areas include all past treatment sites and all new areas considered for treatment. These areas should be evaluated in May 2007 to determine if they require treatment. It is hypothesized that some of these focus areas will have responded to the chemical treatments and therefore will not need treatment. Because there is absolutely no way at this time to determine which focus areas will warrant treatment, a permit for 44.0 acres of chemical treatment is recommended with the assumption that a reduction in the total treated acreage is nearly certain.

Native Plants

Aquatic plants are an important element in every healthy lake. Changes in lake ecosystems are often first seen in the lake's plant community. Whether these changes are positive, like variable water levels or negative, like increased shoreland development or the introduction of an exotic species, the plant community will respond. Plant communities respond in a variety of ways; there may be a loss of one or more species, certain life forms, such as emergents or floating-leaf communities may disappear from certain areas of the lake, or there may be a shift in plant dominance between species. With periodic monitoring and proper analysis, these changes are detectable and provide critical information for management decisions.

As described in more detail in the methods section, two aquatic plant surveys were completed on Lake Metonga. The first appeared strictly for curly-leaf pondweed, and the second inventoried all aquatic species found in the lake. Combined, these surveys produce a great deal of information about the aquatic vegetation of the lake. These data are analyzed and presented in numerous ways; each is discussed in more detail below.

Primer on Data Analysis & Data Interpretation

Species List

The species list is simply a list of all of the species that were found within the lake, both exotic and native. The list also contains the life-form of each plant found, its scientific name, and its coefficient of conservatism. The latter is discussed in more detail below. Changes in this list over time, whether it is differences in total species present, gains and loses of individual species, or changes in life-forms that are present, can be an early indicator of changes in the health of the lake ecosystem.

Frequency of Occurrence

Frequency of occurrence describes how often a certain species is found within a lake. Obviously, all of the plants cannot be counted in a lake, so samples are collected from pre-determined areas. In the case of Lake Metonga, plant samples were collected from plots laid out on a grid that covered the entire lake. Using the data collected from these plots, an estimate of occurrence of each plant species can be determined. In this section, relative frequency of occurrence is used to describe how often each species occurred relative to the other plants. These values are presented in percentages and if all of the values were added up, they would equal 100%. For example, if water lily had a relative frequency of 0.1 and we described that value as a percentage, it would mean that water lily made up 10% of the population.

In the end, this analysis indicates the species that dominate the plant community within the lake. Shifts in dominant plants over time may indicate disturbances in the ecosystem. For instance, low water levels over several years may increase the occurrence of emergent species while decreasing the occurrence of floating-leaf species. Introductions of invasive exotic species may result in major shifts as they crowd out native plants within the system.

Species Diversity

Species diversity is probably the most misused value in ecology because it is often confused with species richness. Species richness is simply the number of species found within a system or community. Although these values are related, they are far from the same because diversity also

takes into account how evenly the species occur within the system. A lake with 25 species may not be more diverse than a lake with 10 if the first lake is highly dominated by one or two species and the second lake has a more even distribution.

A lake with high species diversity is much more stable than a lake with a low diversity. This is analogous to diverse financial portfolio in that a diverse lake plant community can withstand environmental fluctuations much like a diverse portfolio can handle economic fluctuations. For example, a lake with a diverse plant community is much better suited to compete against exotic infestation than a lake with a lower diversity.

Floristic Quality Assessment

Floristic Quality Assessment (FQA) is used to evaluate the closeness of a lake's aquatic plant community to that of an undisturbed, or pristine, lake. The higher the floristic quality, the closer a lake is to an undisturbed system. FQA is an excellent tool for comparing individual lakes and the same lake over time. In this section, the floristic quality of Lake Metonga is compared to lakes in the same ecoregion and in the state (Figure 1).

Ecoregions are areas related by similar climate, physiography, hydrology, vegetation and wildlife potential. Comparing ecosystems in the same ecoregion is sounder than comparing systems within manmade boundaries such as counties, towns, or states.

The floristic quality of a lake is calculated using its species richness and average species conservatism. As mentioned above, species richness is simply the number of species that occur in the lake, for this analysis, only native species are utilized. Average species conservatism utilizes the coefficient of conservatism values for each of those species in its calculation. A species coefficient of conservatism value indicates that species' likelihood of being found in an undisturbed (pristine) system. The values range from one to ten. Species that are normally found in disturbed systems have lower coefficients, while species frequently found in pristine systems have higher values. For example, cattail, an invasive native species, has a value of 1, while common hard and softstem bulrush have values of 5, and Oakes pondweed, a sensitive and rare species, has a value of 10. On their own, the species richness and average conservatism values for a lake are useful in assessing a lake's plant community; however, the best assessment of the lake's plant community health is determined when the two values are used to calculate the lake's floristic quality.

Figure 1. Location of Lake Metonga within the ecoregions of Wisconsin. After Nichols 1999.

Community Mapping

A key component of the aquatic plant survey is the creation of an aquatic plant community map. The map represents a snapshot of the important plant communities in the lake as they existed during the survey and is valuable in the development of the management plan and in comparisons with surveys completed in the future. A mapped community can consist of submergent,

floating-leaf, or emergent plants, or a combination of these life-forms. Examples of submergent plants include wild celery and pondweeds; while emergents include cattails, bulrushes, and arrowheads, and floating-leaf species include white and yellow pond lilies. Emergents and floating-leaf communities lend themselves well to mapping because there are distinct boundaries between communities. Submergent species are often mixed throughout large areas of the lake and are seldom completely visible from the surface; therefore, mapping of submergent communities is more difficult and often impossible.

2005 Surveys

The aquatic plant surveys completed in 2005 located 34 aquatic plant species within Lake Metonga (Table 2) with the only non-native plant being Eurasian water milfoil.

Lake Metonga does not have any plants that completely dominate the system. Common waterweed and coontail (Figure 2) are the most abundant plants, but with the combination of high species richness and an even distribution of the species throughout the lake (relative frequency), the diversity is very high (Simpson's diversity = 0.93). Other common species that occur throughout much of the lake include wild celery and muskgrasses.

Overall, the FQA indicates that floristic quality of Lake Metonga (Figure 3) is excellent, especially when compared to median values for the state and ecoregion. As described above, floristic quality utilizes average conservatism value for all of the native species found in the lake and the total number of those species. Obviously, the high species richness of the lake is the major factor contributing to its excellent floristic quality as Lake Metonga's average conservatism value is slightly below the ecoregion median.

Median Value This is the value that roughly half of the data are smaller and half the data are larger. A median is used when a few data are so large or so small that they skew the average value to the point that it would not represent the population as a whole.

The Lake Metonga average conservatism values are only slightly higher than the state median and slightly less than the ecoregion median. This indicates that many of the species present in the lake are indicative of a somewhat disturbed system. This is not a surprise considering Lake Metonga has vast portions of developed shoreline and the lake experiences a great deal of recreational use. Still, the lake's plant community is outstanding as evidenced by the very high floristic quality and high index of diversity. The quality is also indicated by the high incidence of emergent plant communities that occur in many areas of the lake (Map 2). This is important, because these communities are often negatively affected by recreational use and shoreland development. Radomski and Goeman (2001) found a 66% reduction in vegetation coverage on developed shorelines when compared to undeveloped shorelines in Minnesota Lakes. Furthermore, they also found a significant reduction in abundance and size of northern pike (*Esox lucius*), bluegill (*Lepomis macrochirus*), and pumpkinseed (*Lepomis gibbosus*) associated with these developed shorelines. Many studies have documented the adverse affects of motorboat traffic on aquatic plants (e.g. Murphy and Eaton 1983, Vermaat and de Bruyne 1993, Mumma et al. 1996, Asplund and Cook 1997). In all of these studies, lower plant biomasses and/or declines and higher turbidity were associated with motorboat traffic.

Table 2. Aquatic plant species located in Lake Metonga during the 2005 surveys.

Lake Metonga

Life Form	Scientific Name	Common Name	Coefficient of Conservatism (c)
Emergent	*Carex comosa*	Bristly sedge	5
	Eleocharis palustris	Creeping spike-rush	6
	Equisetum fluviatile	Water horsetail	7
	Juncus pelocarpus	Brown-fruited rush	8
	Sagittaria latifolia	Common arrowhead	3
	Schoenoplectus acutus	Hardstem bulrush	5
	Schoenoplectus tabernaemontani	Softstem bulrush	4
	Typha latifolia	Broad-leaved cattail	1
	Zizania palustrus	Northern wild rice	8
FF	*Lemna minor*	Lesser duckweed	5
	Lemna trisulca	Forked duckweed	6
FL	*Nuphar variegata*	Spatterdock	6
	Nymphaea odorata	White water lily	6
FL/E	*Sparganium emersum*	Short-stemmed bur-reed	8
Submergent	*Ceratophyllum demersum*	Coontail	3
	Chara sp.	Muskgrasses	7
	Elodea canadensis	Common waterweed	3
	Heteranthera dubia	Water stargrass	6
	Isoetes lacustris	Lake quillwort	8
	Megalodonta beckii	Water marigold	8
	Myriophyllum sibiricum	Northern water milfoil	7
	Myriophyllum spicatum	Eurasian water milfoil	Exotic
	Najas flexilis	Slender naiad	6
	Nitella sp.	Stoneworts	7
	Potamogeton gramineus	Variable pondweed	7
	Potamogeton illinoensis	Illinois pondweed	6
	Potamogeton praelongus	White-stem pondweed	8
	Potamogeton pusillus	Small pondweed	7
	Potamogeton zosteriformis	Flat-stem pondweed	6
	Ranunculus flammula	Creeping spearwort	9
	Stuckenia pectinata	Sago pondweed	3
	Utricularia vulgaris	Common bladderwort	7
	Vallisneria americana	Wild celery	6
S/E	*Sagittaria graminea*	Grass-leaved arrowhead	9

FF = Free Floating
FL = Floating Leaf
FL/E = Floating Leaf and Emergent
S/E = Submergent and Emergent

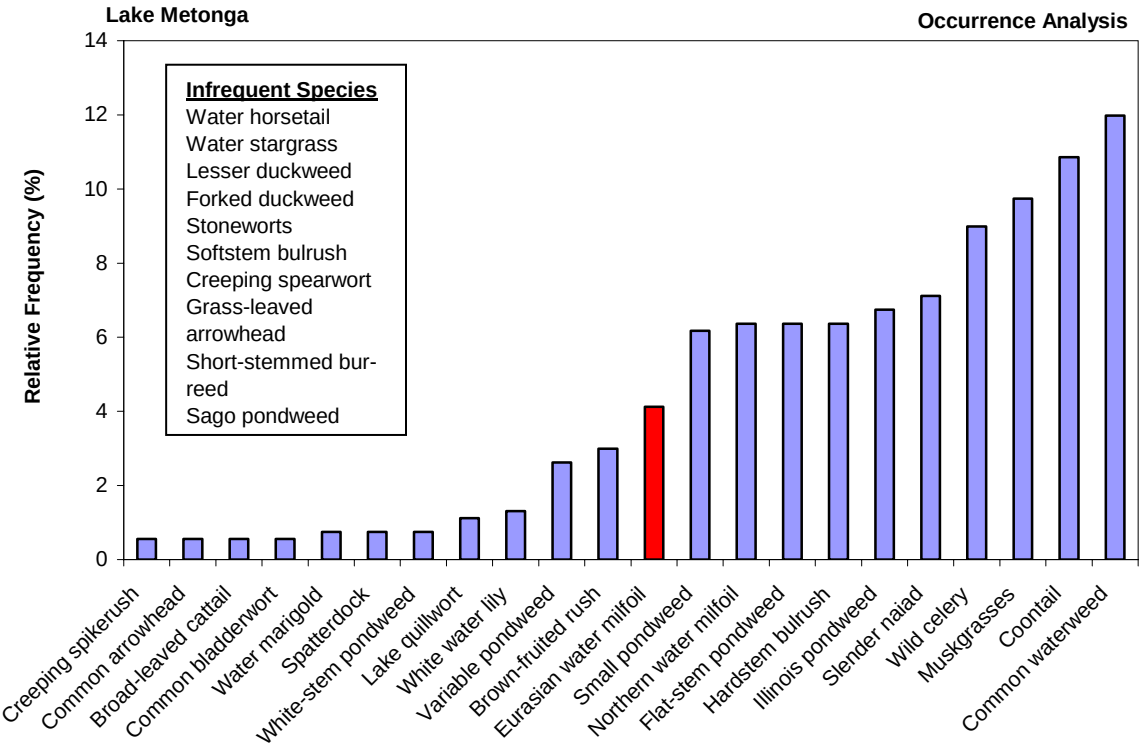

Figure 2. Lake Metonga aquatic plant occurrence analysis of 2005 survey data. Exotic species indicated with red.

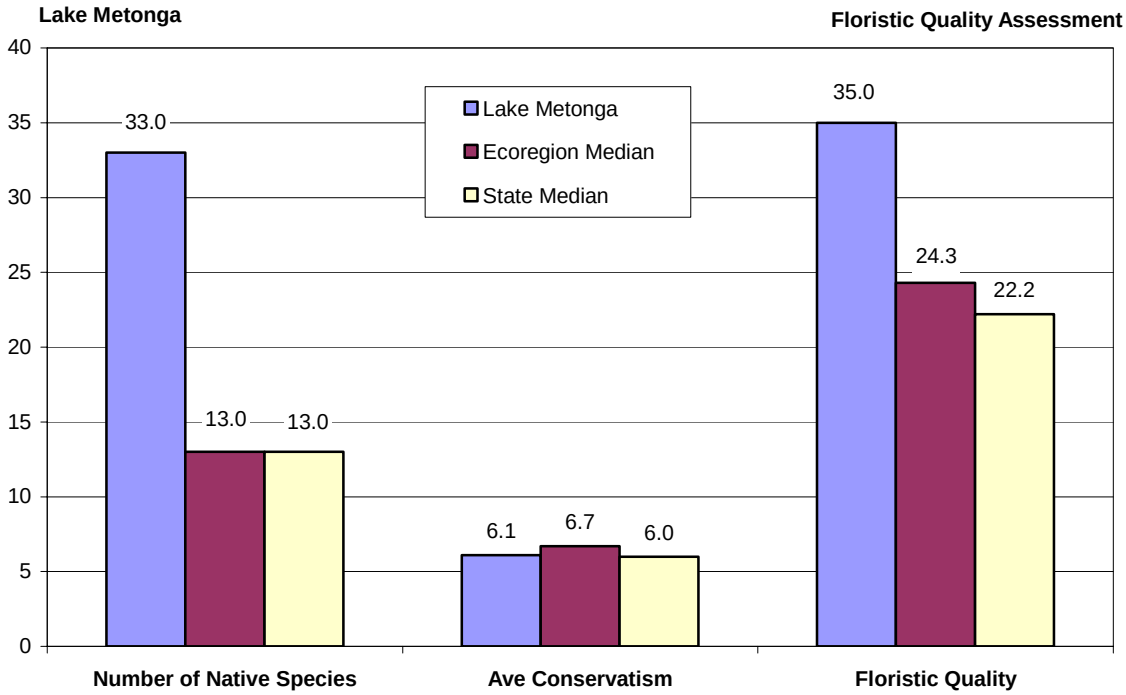

Figure 3. Floristic Quality Analysis using data from 2005 aquatic plant surveys completed on Lake Metonga. Analysis following Nichols 1999.

CONCLUSIONS

Overall, Lake Metonga's aquatic plant community is in good shape. Compared with other lakes in the state and in its ecoregion, there is high species richness in the lake. The average species conservatism value shows that many of the plant species found in the lake are consistent with a somewhat disturbed system. Aside from factors such as high amounts of developed shorelines and recreational use, infestation of non-native organisms may contribute to this phenomenon. Rusty crayfish, zebra mussels, and Eurasian water milfoil are all non-native threats to the health of the ecosystem. EWM is known to exist throughout the lake and is displacing native species at a disturbing rate. It is these native species that support the great fishery that many have grown to appreciate on the lake. Although some species may find the dense EWM colonies as suitable habitat, others will not and the balance of the ecosystem could be in jeopardy. Long-term monitoring of both the native and non-native species will prove to be valuable in the long-term management of Lake Metonga.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN
1	Total Number Species at Site (NO ENTRY!)	Depth with some plants (NO ENTRY!)	Number	Depth (ft)	Sediment type (M=muck, S=Sand, R=Rock)	Rope (R); Pole (P); Visual (V)	Myriophyllum spicatum	Potamogeton crispus	Nymphaea odorata	Nuphar variegata	Vallisneria americana	Elodea canadensis	Ceratophyllum demersum	Najas flexilis	Chara sp.	Stuckenia pectinata	Potamogeton zosteriformis	Potamogeton praelongus	Potamogeton pusillus	Potamogeton illinoensis	Potamogeton gramineus	Sparganium chlorocarpum	Eleocharis palustris	Utricularia vulgaris	Heteranthera dubia	Myriophyllum sibiricum	Sagittaria latifolia	Sagittaria graminea	Scirpus acutus	Scirpus validus	Typha latifolia	Megalodonta beckii	Nitella sp.	Ranunculus flammula	Juncus pelocarpus	Equisetum fluviatile	Isoetes lacustris	Lemma trisulca	Lemna mi
2	1	2	**1**	2	S	P								1																										
3	2	3	**2**	3	S	P						1								1																				
4	2	4	**3**	4	S	P					1				1																								
5	3	3	**4**	3	S	P									1																				1	1					
6	1	3	**5**	3	S	V								1																										
7			**6**	3	R	V																																		
8			**7**	3	R	P																																		
9	1	2	**8**	2	R	V																							1											
10	2	2	**9**	2	S	V								1															1											
11	2	4	**10**	4	S	P								1	1																									
12			**11**	6	S	P																																		
13			**12**	6	S	P																																		
14	4	8	**13**	8	S	P						1	1														1							1						
15	4	6	**14**	6	S	P					1			1	1					1																				
16			**15**																																					
17			**16**																																					
18			**17**																																					
19			**18**																																					
20			**19**																																					
21			**20**																																					
22			**21**																																					
23			**22**																																					
24			**23**																																					
25			**24**																																					
26			**25**																																					
27			**26**																																					
28			**27**																																					
29	2	4	**28**	4	S	P					1															1													
30	2	8	**29**	8	S	P											1									1													
31	3	10	**30**	10	S	R						1	1						1																				
32	2	11	**31**	11	S	R													1							1													
33			**32**	11	S	R																																		
34	2	9	**33**	9	S	P	1					1					1																							
35			**34**	9	S	P																																		
36	2	8	**35**	8	S	P	3				1						1																							
37			**36**	4	S	P																																		
38			**37**	2	S	P																																		
39	3	2	**38**	2	S	V								1	1																									
40	7	5	**39**	5	S	P					1	1		1	1		1			1																1				
41	3	5	**40**	5	S	P					1						1																				1				
42	7	2	**41**	2	M	V			1		1	1					1							1												1	1				
43	8	2	**42**	2	M	P			1	1	1					1	1							1												1				1	
44	1	3	**43**	3	S	P								1																										
45	1	8	**44**	8	S	P									1																										
46	3	9	**45**	9	S	P									1				1							1														
47	1	11	**46**	11	R	R																				1														
48	1	14	**47**	14	S	R						1																												
49			**48**	14	S	R																																		
50	1	17	**49**	17	S	R						1																												
51			**50**	2	R	R																																		
52			**51**	18	R	R																																		
53			**52**	11	R	R																																		
54			**53**	8	R	P																																		
55			**54**	10	R	P																																		
56	2	5	**55**	5	S	P								1	1																									

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN
1	Total Number Species at Site (NO ENTRY!)	Depth with some plants (NO ENTRY!)	Number	Depth (ft)	Sediment type (M=muck, S=Sand, R=Rock)	Rope (R); Pole (P); Visual (V)	Myriophyllum spicatum	Potamogeton crispus	Nymphaea odorata	Nuphar variegata	Vallisneria americana	Elodea canadensis	Ceratophyllum demersum	Najas flexilis	Chara sp.	Stuckenia pectinata	Potamogeton zosteriformis	Potamogeton praelongus	Potamogeton pusillus	Potamogeton illinoensis	Potamogeton gramineus	Sparganium chlorocarpum	Eleocharis palustris	Utricularia vulgaris	Heteranthera dubia	Myriophyllum sibiricum	Sagittaria latifolia	Sagittaria graminea	Scirpus acutus	Scirpus validus	Typha latifolia	Megalodonta beckii	Nitella sp.	Ranunculus flammula	Juncus pelocarpus	Equisetum fluviatile	Isoetes lacustris	Lemma trisulca	Lemna mi
57			**56**	1	R	V																																		
58	1	1	**57**	1	S	V								1																										
59	1	2	**58**	2	S	V								1																										
60	1	3	**59**	3	R	P									1																									
61	3	6	**60**	6	S	P						1			1												1													
62	4	8	**61**	8	S	P					1	1								1							1													
63	2	7	**62**	7	S	P	3				1	1																												
64	2	16	**63**	16	S	R						1							1																					
65	2	16	**64**	16	S	R							1						1																					
66	1	15	**65**	15	S	R													1																					
67			**66**	18	S	R																																		
68			**67**	19	S	R																																		
69			**68**	16	S	R																																		
70	1	11	**69**	11	S	R	1						1																											
71	1	7	**70**	7	S	P	3					1																												
72			**71**	6	S	P																																		
73			**72**	1	R	V																																		
74	2	1	**73**	1	S	P					1										1																			
75	1	4	**74**	4	S	P					1																													
76	7	6	**75**	6	S	P	1				1	1	1				1								1										1	1				
77	2	7	**76**	7	S	P					1															1														
78	3	7	**77**	7	S	P								1	1				1																					
79	1	2	**78**	2	S	P									1																									
80	4	2	**79**	2	S	P					1		1		1						1																			
81	3	2	**80**	2	S	V																						1		1						1				
82	4	4	**81**	4	S	P								1	1					1									1											
83	5	7	**82**	7	S	P					1	1	1				1									1													
84	3	5	**83**	5	S	P						1					1															1							
85	2	3	**84**	3	S	V					1																		1										
86	2	2	**85**	2	S	V																							1							1				
87			**86**	4	R	P																																		
88	1	5	**87**	5	R	P									1																									
89	2	10	**88**	10	S	P	2						1				1																							
90	2	10	**89**	10	S	P	1					1	1																											
91	2	14	**90**	14	S	R							1						1																					
92			**91**	19	S	R																																		
93			**92**	22	S	R																																		
94			**93**	23																																			
95			**94**	24																																			
96			**95**	23																																			
97			**96**	24																																			
98			**97**	23																																			
99			**98**	21	S	R																																		
100			**99**	17	S	R																																		
101			**100**	16	S	R																																		
102	2	15	**101**	15	S	R						1							1																					
103	1	15	**102**	15	S	R													1																					
104	1	2	**103**	2	S	R													1																					
105			**104**	15	S	R																																		
106	1	14	**105**	14	S	R													1																					
107			**106**	18	S	R																																		
108			**107**	27																																			
109			**108**	21																																			
110			**109**	25																																			
111			**110**	30																																			

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN
1	Total Number Species at Site (NO ENTRY!)	Depth with some plants (NO ENTRY!)	Number	Depth (ft)	Sediment type (M=muck, S=Sand, R=Rock)	Rope (R); Pole (P); Visual (V)	Myriophyllum spicatum	Potamogeton crispus	Nymphaea odorata	Nuphar variegata	Vallisneria americana	Elodea canadensis	Ceratophyllum demersum	Najas flexilis	Chara sp.	Stuckenia pectinata	Potamogeton zosteriformis	Potamogeton praelongus	Potamogeton pusillus	Potamogeton illinoensis	Potamogeton gramineus	Sparganium chlorocarpum	Eleocharis palustris	Utricularia vulgaris	Heteranthera dubia	Myriophyllum sibiricum	Sagittaria latifolia	Sagittaria graminea	Scirpus acutus	Scirpus validus	Typha latifolia	Megalodonta beckii	Nitella sp.	Ranunculus flammula	Juncus pelocarpus	Equisetum fluviatile	Isoetes lacustris	Lemma trisulca	Lemna mi
112			**111**	33																																				
113			**112**	27																																				
114			**113**	18	S	R																																		
115	3	6	**114**	6	S	P						1	1						1																					
116			**115**	12	S	R																																		
117	1	6	**116**	6	R	P								1																										
118	2	4	**117**	4	S	P					1				1																									
119			**118**	4	S	P																																		
120	3	12	**119**	12	S	R						1	1				1																							
121			**120**	22																																				
122			**121**	28																																				
123			**122**	25																																				
124	2	13	**123**	13	S	R							1						1																					
125	4	10	**124**	10	S	R						1	1						1								1													
126	1	11	**125**	11	S	R							1																											
127	1	8	**126**	8	S	P														1																				
128	2	2	**127**	2	S	P																							1						1					
129	1	3	**128**	3	S	P																							1											
130	2	5	**129**	5	M	P						1							1																					
131	2	5	**130**	5	M	P	1					1															1													
132	2	2	**131**	2	S	P														1									1											
133	3	4	**132**	4	S	P								1	1					1																				
134	1	6	**133**	6	S	P									1																									
135	1	6	**134**	6	S	P								1																										
136			**135**	8	S	P																																		
137	1	10	**136**	10	S	P													1																					
138	2	14	**137**	14	S	P						1							1																					
139	2	17	**138**	17	S	R	1					1	1																											
140			**139**	19	S	R																																		
141			**140**	22																																				
142			**141**																																				
143			**142**																																				
144			**143**																																				
145			**144**																																				
146			**145**																																				
147			**146**																																				
148			**147**																																				
149			**148**																																				
150			**149**																																				
151			**150**	25																																			
152			**151**	26																																			
153			**152**	24																																			
154			**153**	25																																			
155			**154**	23	S	R																																		
156			**155**																																				
157			**156**																																				
158			**157**																																				
159			**158**																																				
160			**159**																																				
161			**160**																																				
162			**161**	22																																			
163			**162**	24																																			
164			**163**	19	S	R																																		
165	2	13	**164**	13	R	R	1					1															1													
166	2	16	**165**	16	S	P																													1		1			

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN
1	Total Number Species at Site (NO ENTRY!)	Depth with some plants (NO ENTRY!)	Number	Depth (ft)	Sediment type (M=muck, S=Sand, R=Rock)	Rope (R); Pole (P); Visual (V)	Myriophyllum spicatum	Potamogeton crispus	Nymphaea odorata	Nuphar variegata	Vallisneria americana	Elodea canadensis	Ceratophyllum demersum	Najas flexilis	Chara sp.	Stuckenia pectinata	Potamogeton zosteriformis	Potamogeton praelongus	Potamogeton pusillus	Potamogeton illinoensis	Potamogeton gramineus	Sparganium chlorocarpum	Eleocharis palustris	Utricularia vulgaris	Heteranthera dubia	Myriophyllum sibiricum	Sagittaria latifolia	Sagittaria graminea	Scirpus acutus	Scirpus validus	Typha latifolia	Megalodonta beckii	Nitella sp.	Ranunculus flammula	Juncus pelocarpus	Equisetum fluviatile	Isoetes lacustris	Lemna trisulca	Lemna mi
167			**166**	27																																				
168			**167**																																					
169			**168**																																					
170			**169**																																					
171			**170**																																					
172			**171**	30																																				
173			**172**	14	S	R																																		
174	1	16	**173**	16	S	R							1																											
175	4	12	**174**	12	S	R	1					1							1	1						1														
176	2	8	**175**	8	S	P					1															1														
177	2	2	**176**	2	S	V																		1					1											
178	1	3	**177**	3	S	P								1																										
179	2	8	**178**	8	S	P	1										1									1														
180	2	16	**179**	16	M	R						1	1																										
181	2	2	**180**	2	S	P	1				1		1																										
182	1	2	**181**	2	M	V				1																													
183	1	3	**182**	3	S	V							1																										
184	1	4	**183**	4	S	P														1																			
185	1	5	**184**	5	S	P									1																									
186			**185**	4	S	P																																		
187	2	6	**186**	6	S	P														1						1														
188	1	8	**187**	8	S	P														1																			
189	1	8	**188**	8	S	P									1																									
190	3	8	**189**	8	S	P									1				1	1																			
191	4	11	**190**	11	S	R	1					1	1				1		1																				
192	3	12	**191**	12	S	R						1	1				1																						
193			**192**	15	S	R																																		
194			**193**	22																																			
195			**194**																																				
196			**195**																																				
197			**196**																																				
198			**197**																																				
199			**198**	24																																			
200			**199**																																				
201			**200**																																				
202			**201**																																				
203			**202**																																				
204			**203**																																				
205			**204**																																				
206			**205**																																				
207			**206**																																				
208			**207**																																				
209			**208**	26																																			
210			**209**																																				
211			**210**																																				
212			**211**																																				
213			**212**																																				
214			**213**																																				
215			**214**																																				
216			**215**																																				
217			**216**																																				
218			**217**	26																																			
219			**218**	23																																			
220			**219**	30																																			
221			**220**																																				

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN
1	Total Number Species at Site (NO ENTRY!)	Depth with some plants (NO ENTRY!)	Number	Depth (ft)	Sediment type (M=muck, S=Sand, R=Rock)	Rope (R); Pole (P); Visual (V)	Myriophyllum spicatum	Potamogeton crispus	Nymphaea odorata	Nuphar variegata	Vallisneria americana	Elodea canadensis	Ceratophyllum demersum	Najas flexilis	Chara sp.	Stuckenia pectinata	Potamogeton zosteriformis	Potamogeton praelongus	Potamogeton pusillus	Potamogeton illinoensis	Potamogeton gramineus	Sparganium chlorocarpum	Eleocharis palustris	Utricularia vulgaris	Heteranthera dubia	Myriophyllum sibiricum	Sagittaria latifolia	Sagittaria graminea	Scirpus acutus	Scirpus validus	Typha latifolia	Megalodonta beckii	Nitella sp.	Ranunculus flammula	Juncus pelocarpus	Equisetum fluviatile	Isoetes lacustris	Lemma trisulca	Lemna mi
222			**221**																																					
223			**222**																																					
224			**223**																																					
225			**224**																																					
226			**225**																																					
227			**226**	28																																				
228			**227**	30																																				
229			**228**	27																																				
230			**229**	28																																				
231			**230**	25																																				
232			**231**	28																																				
233			**232**	28																																				
234			**233**	25																																				
235			**234**	28																																				
236			**235**	4	S	P																																		
237	1	4	**236**	4	S	P								1																										
238			**237**	4	S	V																																		
239			**238**	4	R	P																																		
240			**239**	5	R	P																																		
241			**240**	6	R	P																																		
242	1	9	**241**	9	S	P													1																					
243	2	14	**242**	14	S	R						1	1																											
244	4	16	**243**	16	S	R						1	1				1		1																					
245			**244**	20	S	R																																		
246			**245**	23																																				
247			**246**																																				
248			**247**																																				
249			**248**																																				
250			**249**																																				
251			**250**																																				
252			**251**																																				
253			**252**																																				
254			**253**																																				
255			**254**																																				
256			**255**																																				
257			**256**																																				
258			**257**																																				
259			**258**																																				
260			**259**																																				
261			**260**																																				
262			**261**																																				
263			**262**																																				
264			**263**																																				
265			**264**																																				
266			**265**																																				
267			**266**																																				
268			**267**																																				
269			**268**																																				
270			**269**																																				
271			**270**																																				
272			**271**																																				
273			**272**																																				
274			**273**																																				
275			**274**																																				
276			**275**																																				

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN
1	**Total Number Species at Site (NO ENTRY!)** Depth with some plants (NO ENTRY!)		**Number**	**Depth (ft)**	**Sediment type (M=muck, S=Sand, R=Rock)**	**Rope (R); Pole (P); Visual (V)**	***Myriophyllum spicatum***	***Potamogeton crispus***	***Nymphaea odorata***	***Nuphar variegata***	***Vallisneria americana***	***Elodea canadensis***	***Ceratophyllum demersum***	***Najas flexilis***	***Chara sp.***	***Stuckenia pectinata***	***Potamogeton zosteriformis***	***Potamogeton praelongus***	***Potamogeton pusillus***	***Potamogeton illinoensis***	***Sparganium gramineus***	***Eleocharis palustris***	***Utricularia vulgaris***	***Heteranthera dubia***	***Myriophyllum sibiricum***	***Sagittaria latifolia***	***Sagittaria graminea***	***Scirpus acutus***	***Scirpus validus***	***Typha latifolia***	***Megalodonta beckii***	***Nitella sp.***	***Ranunculus flammula***	***Juncus pelocarpus***	***Equisetum fluviatile***	***Isoetes lacustris***	***Lemma trisulca***	***Lemna mi***
277			**276**																																					
278			**277**																																					
279			**278**																																					
280			**279**																																					
281			**280**																																					
282			**281**																																					
283			**282**																																					
284			**283**																																					
285			**284**																																					
286			**285**																																					
287			**286**	26																																				
288	1	2	**287**	2	S	P					1																													
289			**288**	3	R	V																																		
290			**289**	3	R	V																																		
291			**290**	4	S	P																																		
292			**291**	3	S	P																																		
293			**292**	3	S	P																																		
294			**293**	4	S	P																																		
295			**294**	4	S	P																																		
296			**295**	5	S	P																																		
297	1	14	**296**	14	S	R											1																							
298	2	16	**297**	16	S	R						1	1																											
299			**298**	19	S	R																																		
300			**299**	22																																			
301			**300**																																				
302			**301**																																				
303			**302**																																				
304			**303**																																				
305			**304**																																				
306			**305**																																				
307			**306**																																				
308			**307**																																				
309			**308**																																				
310			**309**																																				
311			**310**																																				
312			**311**																																				
313			**312**																																				
314			**313**																																				
315			**314**																																				
316			**315**																																				
317			**316**																																				
318			**317**																																				
319			**318**																																				
320			**319**																																				
321			**320**																																				
322			**321**																																				
323			**322**																																				
324			**323**																																				
325			**324**																																				
326			**325**																																				
327			**326**																																				
328			**327**																																				
329			**328**																																				
330			**329**																																				
331			**330**																																				

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN
1	Total Number Species at Site (NO ENTRY!)	Depth with some plants (NO ENTRY!)	Number	Depth (ft)	Sediment type (M=muck, S=Sand, R=Rock)	Rope (R); Pole (P); Visual (V)	Myriophyllum spicatum	Potamogeton crispus	Nymphaea odorata	Nuphar variegata	Vallisneria americana	Elodea canadensis	Ceratophyllum demersum	Najas flexilis	Chara sp.	Stuckenia pectinata	Potamogeton zosteriformis	Potamogeton praelongus	Potamogeton pusillus	Potamogeton illinoensis	Potamogeton gramineus	Sparganium chlorocarpum	Eleocharis palustris	Utricularia vulgaris	Heteranthera dubia	Myriophyllum sibiricum	Sagittaria latifolia	Sagittaria graminea	Scirpus acutus	Scirpus validus	Typha latifolia	Megalodonta beckii	Nitella sp.	Ranunculus flammula	Juncus pelocarpus	Equisetum fluviatile	Isoetes lacustris	Lemma trisulca	Lemna mi
332			**331**																																					
333			**332**																																					
334			**333**																																					
335			**334**																																					
336			**335**																																					
337			**336**																																					
338			**337**																																					
339			**338**																																					
340			**339**																																					
341			**340**	30																																				
342	1	2	**341**	2	S	P					1																													
343	1	3	**342**	3	S	V																							1											
344	2	4	**343**	4	S	P								1	1																									
345	1	6	**344**	6	S	P														1																				
346	1	6	**345**	6	S	P														1																				
347	1	7	**346**	7	S	P									1																									
348	1	7	**347**	7	S	P									1																									
349			**348**	8	S	P																																		
350	1	8	**349**	8	S	P													1																					
351			**350**	10	S	P																																		
352	1	14	**351**	14	S	R								1																										
353	3	15	**352**	15	S	R						1	1				1																							
354			**353**	17	S	R																																		
355			**354**	20	S	R																																		
356			**355**																																					
357			**356**																																					
358			**357**																																					
359			**358**																																					
360			**359**																																					
361			**360**																																					
362			**361**																																					
363			**362**																																					
364			**363**																																					
365			**364**																																					
366			**365**																																					
367			**366**																																					
368			**367**																																					
369			**368**																																					
370			**369**																																					
371			**370**																																					
372			**371**																																					
373			**372**																																					
374			**373**																																					
375			**374**																																					
376			**375**																																					
377			**376**																																					
378			**377**																																					
379			**378**																																					
380			**379**																																					
381			**380**																																					
382			**381**																																					
383			**382**																																					
384			**383**																																					
385			**384**																																					
386			**385**																																					

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN
1	Total Number Species at Site (NO ENTRY!)	Depth with some plants (NO ENTRY!)	Number	Depth (ft)	Sediment type (M=muck, S=Sand, R=Rock)	Rope (R); Pole (P); Visual (V)	Myriophyllum spicatum	Potamogeton crispus	Nymphaea odorata	Nuphar variegata	Vallisneria americana	Elodea canadensis	Ceratophyllum demersum	Najas flexilis	Chara sp.	Stuckenia pectinata	Potamogeton zosteriformis	Potamogeton praelongus	Potamogeton pusillus	Potamogeton illinoensis	Potamogeton gramineus	Sparganium chlorocarpum	Eleocharis palustris	Utricularia vulgaris	Heteranthera dubia	Myriophyllum sibiricum	Sagittaria latifolia	Sagittaria graminea	Scirpus acutus	Scirpus validus	Typha latifolia	Megalodonta beckii	Nitella sp.	Ranunculus flammula	Juncus pelocarpus	Equisetum fluviatile	Isoetes lacustris	Lemma trisulca	Lemna mi
387			**386**																																					
388			**387**																																					
389			**388**																																					
390			**389**																																					
391			**390**																																					
392			**391**																																					
393			**392**																																					
394			**393**																																					
395			**394**																																					
396			**395**	30																																				
397	3	3	**396**	3	S	P					1				1					1																				
398	1	2	**397**	2	S	V														1																				
399	2	4	**398**	4	S	V							1																1											
400			**399**	4	S	P																																		
401	1	11	**400**	11	S	P											1																								
402	5	15	**401**	15	S	R						1	1				1	1		1																				
403	3	15	**402**	15	S	R						1	1				1																								
404	3	15	**403**	15	S	R						1	1					1																							
405	3	15	**404**	15	S	R											1	1									1														
406	1	12	**405**	12	S	R																					1														
407			**406**	9	S	R																																			
408			**407**	12	S	R																																			
409			**408**	11	R	R																																			
410			**409**	10	R	R	3																																		
411	2	10	**410**	10	R	R	2					1	1																												
412	1	16	**411**	16	R	R							1																												
413	2	17	**412**	17	R	R						1	1																												
414			**413**	17	R	R																																			
415			**414**	20	R	R																																			
416			**415**	24																																				
417			**416**																																					
418			**417**																																					
419			**418**																																					
420			**419**																																					
421			**420**																																					
422			**421**																																					
423			**422**																																					
424			**423**																																					
425			**424**																																					
426			**425**																																					
427			**426**																																					
428			**427**																																					
429			**428**																																					
430			**429**																																					
431			**430**																																					
432			**431**																																					
433			**432**																																					
434			**433**																																					
435			**434**																																					
436			**435**																																					
437			**436**																																					
438			**437**																																					
439			**438**																																					
440			**439**																																					
441			**440**																																					

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN
1	Total Number Species at Site (NO ENTRY!)	Depth with some plants (NO ENTRY!)	Number	Depth (ft)	Sediment type (M=muck, S=Sand, R=Rock)	Rope (R); Pole (P); Visual (V)	Myriophyllum spicatum	Potamogeton crispus	Nymphaea odorata	Nuphar variegata	Vallisneria americana	Elodea canadensis	Ceratophyllum demersum	Najas flexilis	Chara sp.	Stuckenia pectinata	Potamogeton zosteriformis	Potamogeton praelongus	Potamogeton pusillus	Potamogeton illinoensis	Potamogeton gramineus	Sparganium chlorocarpum	Eleocharis palustris	Utricularia vulgaris	Heteranthera dubia	Myriophyllum sibiricum	Sagittaria latifolia	Sagittaria graminea	Scirpus acutus	Scirpus validus	Typha latifolia	Megalodonta beckii	Nitella sp.	Ranunculus flammula	Juncus pelocarpus	Equisetum fluviatile	Isoetes lacustris	Lemma trisulca	Lemna mi
442			**441**																																					
443			**442**																																					
444			**443**																																					
445			**444**																																					
446			**445**																																					
447			**446**																																					
448			**447**																																					
449			**448**																																					
450			**449**																																					
451			**450**																																					
452			**451**	33																																				
453			**452**	24																																				
454	2	4	**453**	4	S	P					1									1																				
455			**454**	4	S	V																																		
456	1	6	**455**	6	R	P																																	1		
457	3	16	**456**	16	M	R						1	1													1														
458			**457**	21																																				
459			**458**	23																																				
460			**459**	22																																				
461			**460**	23																																				
462			**461**	22																																				
463	1	18	**462**	18	S	R							1																											
464			**463**	16	S	R																																		
465	2	10	**464**	10	S	R						1	1																											
466			**465**	12	S	R																																		
467	4	12	**466**	12	S	R						1	1				1		1																					
468	3	12	**467**	12	S	R						1	1						1																					
469	2	12	**468**	12	S	R						1	1																											
470			**469**	16	S	R																																		
471	1	8	**470**	8	S	R						1																												
472			**471**	19	S	R																																		
473			**472**	22																																				
474			**473**																																					
475			**474**																																					
476			**475**																																					
477			**476**																																					
478			**477**																																					
479			**478**																																					
480			**479**																																					
481			**480**																																					
482			**481**																																					
483			**482**																																					
484			**483**																																					
485			**484**																																					
486			**485**																																					
487			**486**																																					
488			**487**																																					
489			**488**																																					
490			**489**																																					
491			**490**																																					
492			**491**																																					
493			**492**																																					
494			**493**																																					
495	2	2	**494**	2	S	V																							1						1					
496			**495**																																					

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN
1	Total Number Species at Site (NO ENTRY!)	Depth with some plants (NO ENTRY!)	Number	Depth (ft)	Sediment type (M=muck, S=Sand, R=Rock)	Rope (R); Pole (P); Visual (V)	Myriophyllum spicatum	Potamogeton crispus	Nymphaea odorata	Nuphar variegata	Vallisneria americana	Elodea canadensis	Ceratophyllum demersum	Najas flexilis	Chara sp.	Stuckenia pectinata	Potamogeton zosteriformis	Potamogeton praelongus	Potamogeton pusillus	Potamogeton illinoensis	Potamogeton gramineus	Sparganium chlorocarpum	Eleocharis palustris	Utricularia vulgaris	Heteranthera dubia	Myriophyllum sibiricum	Sagittaria latifolia	Sagittaria graminea	Scirpus acutus	Scirpus validus	Typha latifolia	Megalodonta beckii	Nitella sp.	Ranunculus flammula	Juncus pelocarpus	Equisetum fluviatile	Isoetes lacustris	Lemma trisulca	Lemna mi
497			**496**																																					
498			**497**																																					
499			**498**																																					
500			**499**																																					
501			**500**																																					
502			**501**																																					
503			**502**																																					
504			**503**																																					
505			**504**																																					
506			**505**																																					
507			**506**																																					
508			**507**																																					
509			**508**	29																																				
510	1	9	**509**	9	S	P																				1														
511	2	2	**510**	2	R	V					1									1																				
512			**511**																																					
513	2	4	**512**	4	S	P								1	1																									
514	1	18	**513**	18	S	R							1																											
515			**514**	21																																				
516			**515**	22																																				
517			**516**	23																																				
518			**517**	22																																				
519			**518**	21																																				
520			**519**	18	S	R																																		
521	1	17	**520**	17	S	R							1																											
522			**521**	14	S	R																																		
523	1	12	**522**	12	S	R	3						1																											
524	3	14	**523**	14	S	R						1	1				1																							
525	1	14	**524**	14	S	R							1																											
526	2	16	**525**	16	S	R						1							1																					
527			**526**	18	S	R																																		
528			**527**	25																																				
529			**528**																																					
530			**529**																																					
531			**530**																																					
532			**531**																																					
533			**532**																																					
534			**533**																																					
535			**534**																																					
536			**535**																																					
537			**536**																																					
538			**537**																																					
539			**538**																																					
540			**539**																																					
541			**540**																																					
542			**541**																																					
543			**542**																																					
544			**543**																																					
545			**544**																																					
546			**545**																																					
547			**546**																																					
548			**547**																																					
549			**548**																																					
550			**549**																																					
551			**550**																																					

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN
1	Total Number Species at Site (NO ENTRY!)	Depth with some plants (NO ENTRY!)	Number	Depth (ft)	Sediment type (M=muck, S=Sand, R=Rock)	Rope (R); Pole (P); Visual (V)	Myriophyllum spicatum	Potamogeton crispus	Nymphaea odorata	Nuphar variegata	Vallisneria americana	Elodea canadensis	Ceratophyllum demersum	Najas flexilis	Chara sp.	Stuckenia pectinata	Potamogeton zosteriformis	Potamogeton praelongus	Potamogeton pusillus	Potamogeton illinoensis	Potamogeton gramineus	Sparganium chlorocarpum	Eleocharis palustris	Utricularia vulgaris	Heteranthera dubia	Myriophyllum sibiricum	Sagittaria latifolia	Sagittaria graminea	Scirpus acutus	Scirpus validus	Typha latifolia	Megalodonta beckii	Nitella sp.	Ranunculus flammula	Juncus pelocarpus	Equisetum fluviatile	Isoetes lacustris	Lemma trisulca	Lemna mi
552			**551**																																				
553			**552**																																				
554			**553**																																				
555			**554**																																				
556			**555**																																				
557			**556**																																				
558			**557**																																				
559			**558**																																				
560			**559**																																				
561			**560**																																				
562			**561**																																				
563			**562**	35																																			
564			**563**	37																																				
565			**564**	33																																				
566			**565**	14	S	R																																		
567	1	2	**566**	2	R	P													1																					
568			**567**	3	S	V																																		
569	1	7	**568**	7	S	P														1																				
570			**569**	10	R	P																																		
571			**570**	18	S	R																																		
572			**571**	21																																				
573			**572**																																				
574			**573**																																				
575			**574**	21	S	R																																		
576			**575**	18	S	R																																		
577	1	15	**576**	15	S	R																				1														
578	2	14	**577**	14	S	R	1					1	1																											
579			**578**	17	S	R																																		
580			**579**	16	S	R																																		
581			**580**	17	S	R																																		
582			**581**	28																																			
583			**582**	36																																			
584			**583**	36																																			
585			**584**																																				
586			**585**																																				
587			**586**																																				
588			**587**																																				
589			**588**																																				
590			**589**																																				
591			**590**																																				
592			**591**																																				
593			**592**																																				
594			**593**																																				
595			**594**																																				
596			**595**																																				
597			**596**																																				
598			**597**																																				
599			**598**																																				
600			**599**																																				
601			**600**																																				
602			**601**																																				
603			**602**																																				
604			**603**																																				
605			**604**																																				
606			**605**																																				

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN
1	Total Number Species at Site (NO ENTRY!)	Depth with some plants (NO ENTRY!)	Number	Depth (ft)	Sediment type (M=muck, S=Sand, R=Rock)	Rope (R); Pole (P); Visual (V)	Myriophyllum spicatum	Potamogeton crispus	Nymphaea odorata	Nuphar variegata	Vallisneria americana	Elodea canadensis	Ceratophyllum demersum	Najas flexilis	Chara sp.	Stuckenia pectinata	Potamogeton zosteriformis	Potamogeton praelongus	Potamogeton pusillus	Potamogeton illinoensis	Potamogeton gramineus	Sparganium chlorocarpum	Eleocharis palustris	Utricularia vulgaris	Heteranthera dubia	Myriophyllum sibiricum	Sagittaria latifolia	Sagittaria graminea	Scirpus acutus	Scirpus validus	Typha latifolia	Megalodonta beckii	Nitella sp.	Ranunculus flammula	Juncus pelocarpus	Equisetum fluviatile	Isoetes lacustris	Lemma trisulca	Lemna mi
607			**606**																																					
608			**607**																																					
609			**608**																																					
610			**609**																																					
611			**610**																																					
612			**611**																																					
613			**612**																																					
614			**613**																																					
615			**614**																																					
616			**615**																																					
617			**616**																																					
618			**617**																																					
619			**618**	38																																				
620			**619**	38																																				
621			**620**	36																																				
622			**621**	4	R	P																																		
623			**622**	2	S	V																																		
624	4	7	**623**	7	S	P											1		1	1						1														
625			**624**	8	S	P																																		
626			**625**	16	S	R																																		
627			**626**	21																																				
628			**627**																																					
629			**628**																																					
630			**629**	24																																				
631			**630**	25																																				
632			**631**	24																																				
633			**632**	21																																				
634			**633**	29																																				
635			**634**	30																																				
636			**635**	31																																				
637			**636**	39																																				
638			**637**																																					
639			**638**																																					
640			**639**																																					
641			**640**																																					
642			**641**																																					
643			**642**																																					
644			**643**																																					
645			**644**																																					
646			**645**																																					
647			**646**																																					
648			**647**																																					
649			**648**																																					
650			**649**																																					
651			**650**																																					
652			**651**																																					
653			**652**																																					
654			**653**																																					
655			**654**																																					
656			**655**																																					
657			**656**																																					
658			**657**																																					
659			**658**																																					
660			**659**																																					
661			**660**																																					

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN
1	Total Number Species at Site (NO ENTRY!)	Depth with some plants (NO ENTRY!)	Number	Depth (ft)	Sediment type (M=muck, S=Sand, R=Rock)	Rope (R); Pole (P); Visual (V)	Myriophyllum spicatum	Potamogeton crispus	Nymphaea odorata	Nuphar variegata	Vallisneria americana	Elodea canadensis	Ceratophyllum demersum	Najas flexilis	Chara sp.	Stuckenia pectinata	Potamogeton zosteriformis	Potamogeton praelongus	Potamogeton pusillus	Potamogeton illinoensis	Potamogeton gramineus	Sparganium chlorocarpum	Eleocharis palustris	Utricularia vulgaris	Heteranthera dubia	Myriophyllum sibiricum	Sagittaria latifolia	Sagittaria graminea	Scirpus acutus	Scirpus validus	Typha latifolia	Megalodonta beckii	Nitella sp.	Ranunculus flammula	Juncus pelocarpus	Equisetum fluviatile	Isoetes lacustris	Lemma trisulca	Lemna mi
662			**661**																																					
663			**662**																																					
664			**663**																																					
665			**664**																																					
666			**665**																																					
667			**666**																																					
668			**667**																																					
669			**668**																																					
670			**669**																																					
671			**670**																																					
672			**671**																																					
673			**672**																																					
674			**673**																																					
675			**674**	41																																				
676			**675**	25																																				
677			**676**	3	R	P																																		
678			**677**	2	S	V																																		
679			**678**	6	S	P																																		
680	3	8	**679**	8	R	P						1							1								1														
681			**680**	16	R	R																																		
682			**681**	29																																				
683			**682**																																					
684			**683**																																					
685			**684**																																					
686			**685**																																					
687			**686**																																					
688			**687**																																					
689			**688**																																					
690			**689**																																					
691			**690**																																					
692			**691**																																					
693			**692**																																					
694			**693**																																					
695			**694**																																					
696			**695**																																					
697			**696**																																					
698			**697**																																					
699			**698**																																					
700			**699**																																					
701			**700**																																					
702			**701**																																					
703			**702**																																					
704			**703**																																					
705			**704**																																					
706			**705**																																					
707			**706**																																					
708			**707**																																					
709			**708**																																					
710			**709**																																					
711			**710**																																					
712			**711**																																					
713			**712**																																					
714			**713**																																					
715			**714**																																					
716			**715**																																					

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN
1	Total Number Species at Site (NO ENTRY!)	Depth with some plants (NO ENTRY!)	Number	Depth (ft)	Sediment type (M=muck, S=Sand, R=Rock)	Rope (R); Pole (P); Visual (V)	Myriophyllum spicatum	Potamogeton crispus	Nymphaea odorata	Nuphar variegata	Vallisneria americana	Elodea canadensis	Ceratophyllum demersum	Najas flexilis	Chara sp.	Stuckenia pectinata	Potamogeton zosteriformis	Potamogeton praelongus	Potamogeton pusillus	Potamogeton illinoensis	Potamogeton gramineus	Sparganium chlorocarpum	Eleocharis palustris	Utricularia vulgaris	Heteranthera dubia	Myriophyllum sibiricum	Sagittaria latifolia	Sagittaria graminea	Scirpus acutus	Scirpus validus	Typha latifolia	Megalodonta beckii	Nitella sp.	Ranunculus flammula	Juncus pelocarpus	Equisetum fluviatile	Isoetes lacustris	Lemma trisulca	Lemna mi
717			**716**																																					
718			**717**																																					
719			**718**																																					
720			**719**																																					
721			**720**																																					
722			**721**																																					
723			**722**																																					
724			**723**																																					
725			**724**																																					
726			**725**																																					
727			**726**																																					
728			**727**																																					
729			**728**																																					
730			**729**	36																																				
731			**730**	4	S	P																																		
732			**731**																																					
733			**732**	4	S	V																																		
734			**733**	24																																				
735			**734**	38																																				
736			**735**	45																																				
737			**736**																																					
738			**737**																																					
739			**738**																																					
740			**739**																																					
741			**740**																																					
742			**741**																																					
743			**742**																																					
744			**743**																																					
745			**744**																																					
746			**745**																																					
747			**746**																																					
748			**747**																																					
749			**748**																																					
750			**749**																																					
751			**750**																																					
752			**751**																																					
753			**752**																																					
754			**753**																																					
755			**754**																																					
756			**755**																																					
757			**756**																																					
758			**757**																																					
759			**758**																																					
760			**759**																																					
761			**760**																																					
762			**761**																																					
763			**762**																																					
764			**763**																																					
765			**764**																																					
766			**765**																																					
767			**766**																																					
768			**767**																																					
769			**768**																																					
770			**769**																																					
771			**770**																																					

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN
1	Total Number Species at Site (NO ENTRY!)	Depth with some plants (NO ENTRY!)	Number	Depth (ft)	Sediment type (M=muck, S=Sand, R=Rock)	Rope (R); Pole (P); Visual (V)	Myriophyllum spicatum	Potamogeton crispus	Nymphaea odorata	Nuphar variegata	Vallisneria americana	Elodea canadensis	Ceratophyllum demersum	Najas flexilis	Chara sp.	Stuckenia pectinata	Potamogeton zosteriformis	Potamogeton praelongus	Potamogeton pusillus	Potamogeton illinoensis	Potamogeton gramineus	Sparganium chlorocarpum	Eleocharis palustris	Utricularia vulgaris	Heteranthera dubia	Myriophyllum sibiricum	Sagittaria latifolia	Sagittaria graminea	Scirpus acutus	Scirpus validus	Typha latifolia	Megalodonta beckii	Nitella sp.	Ranunculus flammula	Juncus pelocarpus	Equisetum fluviatile	Isoetes lacustris	Lemma trisulca	Lemna mi
772			**771**																																					
773			**772**																																					
774			**773**																																					
775			**774**																																					
776			**775**																																					
777			**776**																																					
778			**777**																																					
779			**778**																																					
780			**779**																																					
781			**780**																																					
782			**781**																																					
783			**782**																																					
784			**783**	34																																				
785			**784**	7	R	P																																		
786			**785**	2	S	V																																		
787			**786**	18																																				
788			**787**																																					
789			**788**																																					
790			**789**																																					
791			**790**																																					
792			**791**																																					
793			**792**																																					
794			**793**																																					
795			**794**																																					
796			**795**																																					
797			**796**																																					
798			**797**																																					
799			**798**																																					
800			**799**																																					
801			**800**																																					
802			**801**																																					
803			**802**																																					
804			**803**																																					
805			**804**																																					
806			**805**																																					
807			**806**																																					
808			**807**																																					
809			**808**																																					
810			**809**																																					
811			**810**																																					
812			**811**																																					
813			**812**																																					
814			**813**																																					
815			**814**																																					
816			**815**																																					
817			**816**																																					
818			**817**																																					
819			**818**	38																																				
820			**819**	30																																				
821			**820**																																					
822			**821**																																					
823			**822**																																					
824			**823**																																					
825			**824**																																					
826			**825**																																					

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN
1	Total Number Species at Site (NO ENTRY!)	Depth with some plants (NO ENTRY!)	Number	Depth (ft)	Sediment type (M=muck, S=Sand, R=Rock)	Rope (R); Pole (P); Visual (V)	Myriophyllum spicatum	Potamogeton crispus	Nymphaea odorata	Nuphar variegata	Vallisneria americana	Elodea canadensis	Ceratophyllum demersum	Najas flexilis	Chara sp.	Stuckenia pectinata	Potamogeton zosteriformis	Potamogeton praelongus	Potamogeton pusillus	Potamogeton illinoensis	Potamogeton gramineus	Sparganium chlorocarpum	Eleocharis palustris	Utricularia vulgaris	Heteranthera dubia	Myriophyllum sibiricum	Sagittaria latifolia	Sagittaria graminea	Scirpus acutus	Scirpus validus	Typha latifolia	Megalodonta beckii	Nitella sp.	Ranunculus flammula	Juncus pelocarpus	Equisetum fluviatile	Isoetes lacustris	Lemma trisulca	Lemna mi
827			**826**																																					
828			**827**																																					
829			**828**																																					
830			**829**	26																																				
831			**830**	33																																				
832			**831**	30																																				
833			**832**	34																																				
834			**833**	35																																				
835			**834**	34																																				
836			**835**	40																																				
837			**836**	18	S	R																																		
838	1	2	**837**	2	R	P					1																														
839			**838**	2	S	V																																		
840			**839**	38																																				
841			**840**																																					
842			**841**																																					
843			**842**																																					
844			**843**																																					
845			**844**																																					
846			**845**																																					
847			**846**																																					
848			**847**																																					
849			**848**																																					
850			**849**																																					
851			**850**																																					
852			**851**																																					
853			**852**																																					
854			**853**																																					
855			**854**																																					
856			**855**																																					
857			**856**																																					
858			**857**																																					
859			**858**																																					
860			**859**																																					
861			**860**																																					
862			**861**																																					
863			**862**																																					
864			**863**																																					
865			**864**	33																																				
866			**865**																																					
867			**866**																																					
868			**867**																																					
869			**868**																																					
870			**869**																																					
871			**870**	27																																				
872			**871**	28																																				
873			**872**	35																																				
874			**873**																																					
875			**874**																																					
876			**875**																																					
877			**876**																																					
878			**877**																																					
879			**878**																																					
880			**879**																																					
881			**880**	41																																				

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN
1	Total Number Species at Site (NO ENTRY!)	Depth with some plants (NO ENTRY!)	Number	Depth (ft)	Sediment type (M=muck, S=Sand, R=Rock)	Rope (R); Pole (P); Visual (V)	Myriophyllum spicatum	Potamogeton crispus	Nymphaea odorata	Nuphar variegata	Vallisneria americana	Elodea canadensis	Ceratophyllum demersum	Najas flexilis	Chara sp.	Stuckenia pectinata	Potamogeton zosteriformis	Potamogeton praelongus	Potamogeton pusillus	Potamogeton illinoensis	Potamogeton gramineus	Sparganium chlorocarpum	Eleocharis palustris	Utricularia vulgaris	Heteranthera dubia	Myriophyllum sibiricum	Sagittaria latifolia	Sagittaria graminea	Scirpus acutus	Scirpus validus	Typha latifolia	Megalodonta beckii	Nitella sp.	Ranunculus flammula	Juncus pelocarpus	Equisetum fluviatile	Isoetes lacustris	Lemma trisulca	Lemna mi
882			**881**	23																																				
883			**882**	16	S	R																																		
884			**883**	23																																			
885			**884**	14	S	R																																		
886			**885**	14	S	R																																		
887			**886**	16	S	R																																		
888			**887**	33																																			
889	1	12	**888**	12	S	R	1							1																										
890	1	6	**889**	6	S	P								1																										
891			**890**	2	S	V																																		
892	1	10	**891**	10	S	P															1																			
893			**892**	35																																			
894			**893**																																				
895			**894**																																				
896			**895**																																				
897			**896**																																				
898			**897**																																				
899			**898**																																				
900			**899**																																				
901			**900**																																				
902			**901**																																				
903			**902**																																				
904			**903**																																				
905			**904**																																				
906			**905**																																				
907			**906**																																				
908			**907**																																				
909			**908**																																				
910			**909**																																				
911			**910**																																				
912			**911**																																				
913			**912**																																				
914			**913**																																				
915			**914**																																				
916			**915**																																				
917			**916**																																				
918			**917**																																				
919			**918**																																				
920			**919**																																				
921			**920**																																				
922			**921**	28																																			
923			**922**	12	S	R																																		
924	1	15	**923**	15	S	R																				1														
925			**924**	38																																			
926			**925**																																				
927			**926**																																				
928			**927**																																				
929			**928**																																				
930			**929**																																				
931			**930**																																				
932			**931**																																				
933			**932**	39																																			
934	1	13	**933**	13	R	R						1																												
935			**934**	9	R	P																																		
936			**935**	6	S	P																																		

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN
1	Total Number Species at Site (NO ENTRY!)	Depth with some plants (NO ENTRY!)	Number	Depth (ft)	Sediment type (M=muck, S=Sand, R=Rock)	Rope (R); Pole (P); Visual (V)	Myriophyllum spicatum	Potamogeton crispus	Nymphaea odorata	Nuphar variegata	Vallisneria americana	Elodea canadensis	Ceratophyllum demersum	Najas flexilis	Chara sp.	Stuckenia pectinata	Potamogeton zosteriformis	Potamogeton praelongus	Potamogeton pusillus	Potamogeton illinoensis	Potamogeton gramineus	Sparganium chlorocarpum	Eleocharis palustris	Utricularia vulgaris	Heteranthera dubia	Myriophyllum sibiricum	Sagittaria latifolia	Sagittaria graminea	Scirpus acutus	Scirpus validus	Typha latifolia	Megalodonta beckii	Nitella sp.	Ranunculus flammula	Juncus pelocarpus	Equisetum fluviatile	Isoetes lacustris	Lemma trisulca	Lemna mi
937			**936**	6	R	P																																		
938			**937**	5	E	P																																		
939			**938**	5	S	P																																		
940			**939**	32																																				
941			**940**	6	R	P																																		
942			**941**	4	R	V																																		
943			**942**																																				
944			**943**	4	S	V																																		
945	4	18	**944**	18	S	R					1	1	1													1														
946			**945**																																				
947			**946**																																				
948			**947**																																				
949			**948**																																				
950			**949**																																				
951			**950**																																				
952			**951**																																				
953			**952**																																				
954			**953**																																				
955			**954**																																				
956			**955**																																				
957			**956**																																				
958			**957**																																				
959			**958**																																				
960			**959**																																				
961			**960**																																				
962			**961**																																				
963			**962**																																				
964			**963**																																				
965			**964**																																				
966			**965**																																				
967			**966**																																				
968			**967**																																				
969			**968**																																				
970			**969**																																				
971			**970**																																				
972			**971**																																				
973			**972**																																				
974			**973**	21																																			
975			**974**	7	S	P																																		
976			**975**	10	S	R																																		
977			**976**	29																																			
978			**977**																																				
979			**978**																																				
980			**979**																																				
981			**980**																																				
982			**981**																																				
983			**982**																																				
984			**983**																																				
985			**984**	34																																			
986			**985**	21	S	R																																		
987			**986**	5	S	P																																		
988			**987**	10	S	P																																		
989			**988**	9	S	P																																		
990			**989**	25																																			
991			**990**	16	S	R																																		

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN
1	Total Number Species at Site (NO ENTRY!)	Depth with some plants (NO ENTRY!)	Number	Depth (ft)	Sediment type (M=muck, S=Sand, R=Rock)	Rope (R); Pole (P); Visual (V)	Myriophyllum spicatum	Potamogeton crispus	Nymphaea odorata	Nuphar variegata	Vallisneria americana	Elodea canadensis	Ceratophyllum demersum	Najas flexilis	Chara sp.	Stuckenia pectinata	Potamogeton zosteriformis	Potamogeton praelongus	Potamogeton pusillus	Potamogeton illinoensis	Potamogeton gramineus	Sparganium chlorocarpum	Eleocharis palustris	Utricularia vulgaris	Heteranthera dubia	Myriophyllum sibiricum	Sagittaria latifolia	Sagittaria graminea	Scirpus acutus	Scirpus validus	Typha latifolia	Megalodonta beckii	Nitella sp.	Ranunculus flammula	Juncus pelocarpus	Equisetum fluviatile	Isoetes lacustris	Lemma trisulca	Lemna mi
992			**991**	18	S	R																																		
993			**992**	3	R	V																																		
994			**993**	2	S	V																																		
995			**994**	5	S	P																																		
996	1	9	**995**	9	S	P					1																													
997			**996**	21																																				
998			**997**																																				
999			**998**																																				
1000			**999**																																				
1001			**1000**																																				
1002			**1001**																																				
1003			**1002**																																				
1004			**1003**																																				
1005			**1004**																																				
1006			**1005**																																				
1007			**1006**																																				
1008			**1007**																																				
1009			**1008**																																				
1010			**1009**																																				
1011			**1010**																																				
1012			**1011**																																				
1013			**1012**																																				
1014			**1013**																																				
1015			**1014**																																				
1016			**1015**																																				
1017			**1016**																																				
1018			**1017**																																				
1019			**1018**																																				
1020			**1019**																																				
1021			**1020**																																				
1022			**1021**																																				
1023			**1022**																																				
1024			**1023**	23																																				
1025			**1024**	4	S	P																																		
1026			**1025**	5	S	P																																		
1027			**1026**	15	S	R																																		
1028			**1027**	37																																			
1029			**1028**																																				
1030			**1029**																																				
1031			**1030**	38																																				
1032			**1031**	27																																				
1033			**1032**																																				
1034			**1033**	39																																				
1035			**1034**	25																																				
1036			**1035**	9	S	P																																		
1037	1	5	**1036**	5	R	P								1																										
1038	4	4	**1037**	4	S	P							1	1	1					1																				
1039			**1038**	23																																				
1040			**1039**	25																																				
1041			**1040**	27																																				
1042			**1041**	2	S	P																																		
1043			**1042**	6	S	P																																		
1044			**1043**	3	S	P																																		
1045	1	4	**1044**	4	S	P					1																													
1046	1	5	**1045**	5	S	P									1																										

1	Total Number Species at Site (NO ENTRY!)	Depth with some plants (NO ENTRY!)	Number	Depth (ft)	Sediment type (M=muck, S=Sand, R=Rock)	Rope (R); Pole (P); Visual (V)	Myriophyllum spicatum	Potamogeton crispus	Nymphaea odorata	Nuphar variegata	Vallisneria americana	Elodea canadensis	Ceratophyllum demersum	Najas flexilis	Chara sp.	Stuckenia pectinata	Potamogeton zosteriformis	Potamogeton praelongus	Potamogeton pusillus	Potamogeton illinoensis	Potamogeton gramineus	Sparganium chlorocarpum	Eleocharis palustris	Utricularia vulgaris	Heteranthera dubia	Myriophyllum sibiricum	Sagittaria latifolia	Sagittaria graminea	Scirpus acutus	Scirpus validus	Typha latifolia	Megalodonta beckii	Nitella sp.	Ranunculus flammula	Juncus pelocarpus	Equisetum fluviatile	Isoetes lacustris	Lemma trisulca	Lemna mi
1047	1	5	**1046**	5	S	P							1																										
1048			**1047**	5	S	P																																	
1049			**1048**	5	S	P																																	
1050			**1049**	10	S	P																																	
1051			**1050**	21																																		
1052			**1051**	45																																		
1053			**1052**																																			
1054			**1053**																																			
1055			**1054**																																			
1056			**1055**																																			
1057			**1056**																																			
1058			**1057**																																			
1059			**1058**																																			
1060			**1059**																																			
1061			**1060**																																			
1062			**1061**																																			
1063			**1062**																																			
1064			**1063**																																			
1065			**1064**																																			
1066			**1065**																																			
1067			**1066**	22																																		
1068			**1067**	24																																		
1069			**1068**																																			
1070			**1069**																																			
1071			**1070**																																			
1072			**1071**	47																																		
1073			**1072**	13	S	R																																	
1074	1	5	**1073**	5	S	P								1																									
1075	1	4	**1074**	4	S	P								1																									
1076	2	10	**1075**	10	S	P													1							1													
1077			**1076**	36																																		
1078			**1077**																																			
1079			**1078**																																			
1080			**1079**	35																																		
1081			**1080**	18	S	R																																	
1082			**1081**	29																																		
1083			**1082**	33																																		
1084			**1083**	16	S	R																																	
1085			**1084**	5	S	P																																	
1086			**1085**	3	S	P																																	
1087			**1086**	1	R	V																																	
1088	2	12	**1087**	12	S	R						1	1																										
1089			**1088**	26																																		
1090			**1089**	26																																		
1091			**1090**	17	S	R																																	
1092			**1091**																																			
1093			**1092**																																			
1094			**1093**	2	S	V																																	
1095	1	3	**1094**	3	S	P									1																								
1096	3	3	**1095**	3	S	P								1	1																							1	
1097			**1096**	5	S	P																																	
1098			**1097**	6	S	P																																	
1099			**1098**	6	S	P																																	
1100	2	7	**1099**	7	S	P					1				1																								
1101			**1100**	16	S	R																																	

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN
1	Total Number Species at Site (NO ENTRY!)	Depth with some plants (NO ENTRY!)	Number	Depth (ft)	Sediment type (M=muck, S=Sand, R=Rock)	Rope (R); Pole (P); Visual (V)	Myriophyllum spicatum	Potamogeton crispus	Nymphaea odorata	Nuphar variegata	Vallisneria americana	Elodea canadensis	Ceratophyllum demersum	Najas flexilis	Chara sp.	Stuckenia pectinata	Potamogeton zosteriformis	Potamogeton praelongus	Potamogeton pusillus	Potamogeton illinoensis	Potamogeton gramineus	Sparganium chlorocarpum	Eleocharis palustris	Utricularia vulgaris	Heteranthera dubia	Myriophyllum sibiricum	Sagittaria latifolia	Sagittaria graminea	Scirpus acutus	Scirpus validus	Typha latifolia	Megalodonta beckii	Nitella sp.	Ranunculus flammula	Juncus pelocarpus	Equisetum fluviatile	Isoetes lacustris	Lemma trisulca	Lemna mi
1102			**1101**	22																																				
1103			**1102**	39																																				
1104			**1103**	45																																				
1105			**1104**																																					
1106			**1105**																																					
1107			**1106**																																					
1108			**1107**																																					
1109			**1108**																																					
1110			**1109**																																					
1111			**1110**																																					
1112			**1111**																																					
1113			**1112**																																					
1114			**1113**																																					
1115			**1114**																																					
1116			**1115**	22																																				
1117			**1116**	18	S	R																																		
1118			**1117**	26																																				
1119			**1118**	40																																				
1120			**1119**	39																																				
1121			**1120**	38																																				
1122			**1121**	27																																				
1123	1	6	**1122**	6	S	P																				1														
1124			**1123**	3	S	P																																		
1125			**1124**	3	S	P																																		
1126			**1125**	22																																				
1127			**1126**	29																																				
1128			**1127**	34																																				
1129			**1128**	26																																				
1130			**1129**	13	S	R																																		
1131	2	10	**1130**	10	S	R						1		1																										
1132			**1131**	9	S	P																																		
1133	1	3	**1132**	3	S	P	1							1																										
1134	1	2	**1133**	2	S	V																								1										
1135	2	2	**1134**	2	S	P	1				1			1																										
1136			**1135**	1	R	V																																		
1137	1	14	**1136**	14	S	R								1																										
1138			**1137**	24																																				
1139	1	18	**1138**	18	S	R							1																											
1140			**1139**	5	S	P																																		
1141			**1140**	2	S	P																																		
1142			**1141**	2	S	V																																		
1143			**1142**	3	S	P																																		
1144	3	4	**1143**	4	S	P									1					1										1										
1145	1	4	**1144**	4	S	P									1																										
1146			**1145**	5	S	P																																		
1147			**1146**	5	S	P																																		
1148	1	5	**1147**	5	S	P													1																					
1149			**1148**	12	S	P																																		
1150			**1149**	23																																			
1151			**1150**	31																																			
1152			**1151**	37																																			
1153			**1152**																																				
1154			**1153**																																				
1155			**1154**																																				
1156			**1155**																																				

1	A	B	Total Number Species at Site (NO ENTRY!)	Depth with some plants (NO ENTRY!) Number	Depth (ft)	Sediment type (M=muck, S=Sand, R=Rock)	Rope (R); Pole (P); Visual (V)	Myriophyllum spicatum	Potamogeton crispus	Nymphaea odorata	Nuphar variegata	Vallisneria americana	Elodea canadensis	Ceratophyllum demersum	Najas flexilis	Chara sp.	Stuckenia pectinata	Potamogeton zosteriformis	Potamogeton praelongus	Potamogeton pusillus	Potamogeton illinoensis	Potamogeton gramineus	Sparganium chlorocarpum	Eleocharis palustris	Utricularia vulgaris	Heteranthera dubia	Myriophyllum sibiricum	Sagittaria latifolia	Sagittaria graminea	Scirpus acutus	Scirpus validus	Typha latifolia	Megalodonta beckii	Nitella sp.	Ranunculus flammula	Juncus pelocarpus	Equisetum fluviatile	Isoetes lacustris	Lemma trisulca	Lemna mi
1157			**1156**																																					
1158			**1157**	46																																				
1159			**1158**	30																																				
1160			**1159**	40																																				
1161			**1160**	41																																				
1162			**1161**	37																																				
1163	1	17	**1162**	17	S	R						1																												
1164	2	11	**1163**	11	S	R						1																1												
1165			**1164**	11	S	R																																		
1166			**1165**	36																																				
1167			**1166**	38																																				
1168			**1167**	41																																				
1169			**1168**	39																																				
1170			**1169**	19	S	R																																		
1171	1	3	**1170**	3	S	V																																		
1172	5	2	**1171**	2	S	V						1			1						1																			
1173	2	2	**1172**	2	S	V																																		
1174	2	4	**1173**	4	S	P					1									1																				
1175	4	11	**1174**	11	S	R						1	1					1										1												
1176	1	8	**1175**	8	S	P														1																				
1177	3	8	**1176**	8	S	P							1				1			1																				
1178	1	5	**1177**	5	S	P					1																													
1179	2	2	**1178**	2	S	P					1										1																			
1180	1	1	**1179**	1	S	V															1																			
1181	4	1	**1180**	1	S	V			1								1					1	1																	
1182	3	7	**1181**	7	M	P							1				1										1													
1183			**1182**	5	R	P																																		
1184			**1183**	0.5	S	V																																		
1185			**1184**	2	S	P																																		
1186	1	3	**1185**	3	S	P									1																									
1187	1	3	**1186**	3	R	P									1																									
1188			**1187**	4	R	P																																		
1189	1	6	**1188**	6	S	P									1																									
1190			**1189**	6	S	P																																		
1191			**1190**	8	S	P																																		
1192	1	15	**1191**	15	S	R												1																						
1193			**1192**	18	S	R																																		
1194			**1193**	19	S	R																																		
1195			**1194**	24																																			
1196			**1195**	43																																			
1197			**1196**	39																																			
1198			**1197**	34																																			
1199			**1198**	48																																			
1200			**1199**	43																																			
1201	1	18	**1200**	18	S	R						1																												
1202			**1201**	18	S	R																																		
1203			**1202**	35																																			
1204			**1203**	27																																			
1205	2	11	**1204**	11	S	P											1										1													
1206			**1205**	6	S	P																																		
1207			**1206**	6	S	P																																		
1208	2	9	**1207**	9	S	R						1																1												
1209			**1208**	32																																			
1210			**1209**	36																																			
1211			**1210**	38																																			

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN
1	Total Number Species at Site (NO ENTRY!)	Depth with some plants (NO ENTRY!)	Number	Depth (ft)	Sediment type (M=muck, S=Sand, R=Rock)	Rope (R); Pole (P); Visual (V)	Myriophyllum spicatum	Potamogeton crispus	Nymphaea odorata	Nuphar variegata	Vallisneria americana	Elodea canadensis	Ceratophyllum demersum	Najas flexilis	Chara sp.	Stuckenia pectinata	Potamogeton zosteriformis	Potamogeton praelongus	Potamogeton pusillus	Potamogeton illinoensis	Potamogeton gramineus	Sparganium chlorocarpum	Eleocharis palustris	Utricularia vulgaris	Heteranthera dubia	Myriophyllum sibiricum	Sagittaria latifolia	Sagittaria graminea	Scirpus acutus	Scirpus validus	Typha latifolia	Megalodonta beckii	Nitella sp.	Ranunculus flammula	Juncus pelocarpus	Equisetum fluviatile	Isoetes lacustris	Lemma trisulca	Lemna mi
1212			**1211**	13	S	R																																		
1213	1	3	**1212**	3	S	V																							1											
1214			**1213**	2	S	V																																		
1215	3	2	**1214**	2	S	V					1		1								1																			
1216			**1215**	3	S	V																																		
1217			**1216**	0.5	S	V																																		
1218			**1217**	2	S	V																																		
1219	1	2	**1218**	2	S	P							1																											
1220	2	3	**1219**	3	S	V																							1						1					
1221			**1220**	4	S	P																																		
1222			**1221**	5	S	P																																		
1223			**1222**	6	S	P																																		
1224			**1223**	8	S	P																																		
1225	1	14	**1224**	14	S	R											1																							
1226			**1225**	24																																				
1227			**1226**	25																																				
1228			**1227**	25																																				
1229			**1228**	27																																				
1230			**1229**	15	S	R																																		
1231			**1230**	32																																				
1232			**1231**	36																																				
1233			**1232**	20																																				
1234	2	10	**1233**	10	S	R					1						1																							
1235	1	11	**1234**	11	S	R					1																													
1236	1	7	**1235**	7	S	P								1																										
1237	1	5	**1236**	5	S	P									1																										
1238	4	5	**1237**	5	S	P					1	1		1	1																									
1239	4	2	**1238**	2	S	V					1			1						1									1											
1240			**1239**	4	S	P																																		
1241	2	9	**1240**	9	S	R					1									1																				
1242			**1241**	18	S	R																																		
1243			**1242**	18	S	R																																		
1244	1	6	**1243**	6	S	R														1																				
1245	3	2	**1244**	2	S	V					1				1						1																				
1246			**1245**	3	S	V																																		
1247			**1246**	2	S	V																																		
1248	1	3	**1247**	3	R	P									1																									
1249			**1248**	3	R	P																																		
1250	2	6	**1249**	6	S	P					1				1																									
1251	1	6	**1250**	6	S	P									1																									
1252			**1251**	9	R	P																																		
1253			**1252**	21																																				
1254			**1253**	16	S	R																																		
1255			**1254**	8	R	P																																		
1256			**1255**	6	S	P																																		
1257			**1256**	8	R	P																																		
1258			**1257**	10	S	T																																		
1259			**1258**	26																																				
1260			**1259**	33																																				
1261			**1260**	21																																				
1262	1	6	**1261**	6	S	R									1																									
1263			**1262**	4	S	V																																		
1264	1	2	**1263**	2	S	P									1																									
1265	1	2	**1264**	2	S	V					1																													
1266			**1265**	2	S	V																																		

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN
1	Total Number Species at Site (NO ENTRY!)	Depth with some plants (NO ENTRY!)	Number	Depth (ft)	Sediment type (M=muck, S=Sand, R=Rock)	Rope (R); Pole (P); Visual (V)	Myriophyllum spicatum	Potamogeton crispus	Nymphaea odorata	Nuphar variegata	Vallisneria americana	Elodea canadensis	Ceratophyllum demersum	Najas flexilis	Chara sp.	Stuckenia pectinata	Potamogeton zosteriformis	Potamogeton praelongus	Potamogeton pusillus	Potamogeton illinoensis	Potamogeton gramineus	Sparganium chlorocarpum	Eleocharis palustris	Utricularia vulgaris	Heteranthera dubia	Myriophyllum sibiricum	Sagittaria latifolia	Sagittaria graminea	Scirpus acutus	Scirpus validus	Typha latifolia	Megalodonta beckii	Nitella sp.	Ranunculus flammula	Juncus pelocarpus	Equisetum fluviatile	Isoetes lacustris	Lemma trisulca	Lemna mi
1267	4	2	**1266**	2	S	V					1																		1						1		1			
1268	2	2	**1267**	2	S	V																													1		1			
1269	1	5	**1268**	5	S	R					1																													
1270	1	3	**1269**	3	S	V																													1					
1271			**1270**	1	S	V																																		
1272			**1271**	2	S	V																																		
1273	1	3	**1272**	3	S	P																							1											
1274	2	2	**1273**	2	S	V																							1						1					
1275	1	3	**1274**	3	S	V																							1											
1276	1	5	**1275**	5	S	P									1																									
1277			**1276**	6	S	P																																		
1278	1	5	**1277**	5	S	P									1																									
1279			**1278**	5	S	P																																		
1280			**1279**	5	S	P																																		
1281			**1280**	5	S	P																																		
1282			**1281**	5	S	P																																		
1283			**1282**	5	S	P																																		
1284			**1283**	215																																		
1285			**1284**	27																																		
1286	2	13	**1285**	13	S	R						1							1																				
1287			**1286**	2	S	V																																		
1288			**1287**	2	S	V																																		
1289	7	2	**1288**	2	M	V			1											1		1		1			1		1	1									
1290	2	1	**1289**	1	S	V								1							1																			
1291	5	1	**1290**	1	S	V				1		1		1		1					1																			
1292	3	1	**1291**	1	S	V									1																					1		1			
1293	2	1	**1292**	1	S	V															1															1					
1294	2	1	**1293**	1	S	V															1								1											
1295	2	2	**1294**	2	S	V																	1						1											
1296	2	3	**1295**	3	S	V														1									1											
1297			**1296**	2	R	V																																		
1298			**1297**	5	R	V																																		
1299	1	3	**1298**	3	S	V																							1											
1300	2	4	**1299**	4	S	P						1			1																									
1301			**1300**	3	S	V																																		
1302	1	3	**1301**	3	S	V					1																													
1303	2	3	**1302**	3	S	P					1				1																									
1304			**1303**	2	S	V																																		
1305	5	0.5	**1304**	0.5	S	V			1	1																	1	1			1									
1306	3	7	**1305**	7	M	P							1				1			1																				
1307	4	1	**1306**	1	S	V			1		1									1									1											
1308	3	1	**1307**	1	S	V														1	1								1											
1309	4	1	**1308**	1	S	V								1	1						1								1											
1310			**1309**																																				
1311	2	6	**1310**	6	M	P							1				1																							
1312	5	2	**1311**	2	M	V			1			1	1				1										1												

	AO
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	
25	
26	
27	
28	
29	
30	
31	
32	
33	
34	
35	
36	
37	
38	
39	
40	
41	
42	
43	
44	
45	
46	
47	
48	
49	
50	
51	
52	
53	
54	
55	
56	

	AO
1	
57	
58	
59	
60	
61	
62	
63	
64	
65	
66	
67	
68	
69	
70	
71	
72	
73	
74	
75	
76	
77	
78	
79	
80	
81	
82	
83	
84	
85	
86	
87	
88	
89	
90	
91	
92	
93	
94	
95	
96	
97	
98	
99	
100	
101	
102	
103	
104	
105	
106	
107	
108	
109	
110	
111	

	AO
1	
112	
113	
114	
115	
116	
117	
118	
119	
120	
121	
122	
123	
124	
125	
126	
127	
128	
129	
130	
131	
132	
133	
134	
135	
136	
137	
138	
139	
140	
141	
142	
143	
144	
145	
146	
147	
148	
149	
150	
151	
152	
153	
154	
155	
156	
157	
158	
159	
160	
161	
162	
163	
164	
165	
166	

	AO
1	
167	
168	
169	
170	
171	
172	
173	
174	
175	
176	
177	
178	
179	
180	
181	
182	
183	
184	
185	
186	
187	
188	
189	
190	
191	
192	
193	
194	
195	
196	
197	
198	
199	
200	
201	
202	
203	
204	
205	
206	
207	
208	
209	
210	
211	
212	
213	
214	
215	
216	
217	
218	
219	
220	
221	

	AO
1	
222	
223	
224	
225	
226	
227	
228	
229	
230	
231	
232	
233	
234	
235	
236	
237	
238	
239	
240	
241	
242	
243	
244	
245	
246	
247	
248	
249	
250	
251	
252	
253	
254	
255	
256	
257	
258	
259	
260	
261	
262	
263	
264	
265	
266	
267	
268	
269	
270	
271	
272	
273	
274	
275	
276	

	AO
1	
277	
278	
279	
280	
281	
282	
283	
284	
285	
286	
287	
288	
289	
290	
291	
292	
293	
294	
295	
296	
297	
298	
299	
300	
301	
302	
303	
304	
305	
306	
307	
308	
309	
310	
311	
312	
313	
314	
315	
316	
317	
318	
319	
320	
321	
322	
323	
324	
325	
326	
327	
328	
329	
330	
331	

	AO
1	
332	
333	
334	
335	
336	
337	
338	
339	
340	
341	
342	
343	
344	
345	
346	
347	
348	
349	
350	
351	
352	
353	
354	
355	
356	
357	
358	
359	
360	
361	
362	
363	
364	
365	
366	
367	
368	
369	
370	
371	
372	
373	
374	
375	
376	
377	
378	
379	
380	
381	
382	
383	
384	
385	
386	

	AO
1	
387	
388	
389	
390	
391	
392	
393	
394	
395	
396	
397	
398	
399	
400	
401	
402	
403	
404	
405	
406	
407	
408	
409	
410	
411	
412	
413	
414	
415	
416	
417	
418	
419	
420	
421	
422	
423	
424	
425	
426	
427	
428	
429	
430	
431	
432	
433	
434	
435	
436	
437	
438	
439	
440	
441	

	AO
1	
442	
443	
444	
445	
446	
447	
448	
449	
450	
451	
452	
453	
454	
455	
456	
457	
458	
459	
460	
461	
462	
463	
464	
465	
466	
467	
468	
469	
470	
471	
472	
473	
474	
475	
476	
477	
478	
479	
480	
481	
482	
483	
484	
485	
486	
487	
488	
489	
490	
491	
492	
493	
494	
495	
496	

	AO
1	
497	
498	
499	
500	
501	
502	
503	
504	
505	
506	
507	
508	
509	
510	
511	
512	
513	
514	
515	
516	
517	
518	
519	
520	
521	
522	
523	
524	
525	
526	
527	
528	
529	
530	
531	
532	
533	
534	
535	
536	
537	
538	
539	
540	
541	
542	
543	
544	
545	
546	
547	
548	
549	
550	
551	

	AO
1	
552	
553	
554	
555	
556	
557	
558	
559	
560	
561	
562	
563	
564	
565	
566	
567	
568	
569	
570	
571	
572	
573	
574	
575	
576	
577	
578	
579	
580	
581	
582	
583	
584	
585	
586	
587	
588	
589	
590	
591	
592	
593	
594	
595	
596	
597	
598	
599	
600	
601	
602	
603	
604	
605	
606	

	AO
1	
607	
608	
609	
610	
611	
612	
613	
614	
615	
616	
617	
618	
619	
620	
621	
622	
623	
624	
625	
626	
627	
628	
629	
630	
631	
632	
633	
634	
635	
636	
637	
638	
639	
640	
641	
642	
643	
644	
645	
646	
647	
648	
649	
650	
651	
652	
653	
654	
655	
656	
657	
658	
659	
660	
661	

	AO
1	
662	
663	
664	
665	
666	
667	
668	
669	
670	
671	
672	
673	
674	
675	
676	
677	
678	
679	
680	
681	
682	
683	
684	
685	
686	
687	
688	
689	
690	
691	
692	
693	
694	
695	
696	
697	
698	
699	
700	
701	
702	
703	
704	
705	
706	
707	
708	
709	
710	
711	
712	
713	
714	
715	
716	

	AO
1	
717	
718	
719	
720	
721	
722	
723	
724	
725	
726	
727	
728	
729	
730	
731	
732	
733	
734	
735	
736	
737	
738	
739	
740	
741	
742	
743	
744	
745	
746	
747	
748	
749	
750	
751	
752	
753	
754	
755	
756	
757	
758	
759	
760	
761	
762	
763	
764	
765	
766	
767	
768	
769	
770	
771	

	AO
1	
772	
773	
774	
775	
776	
777	
778	
779	
780	
781	
782	
783	
784	
785	
786	
787	
788	
789	
790	
791	
792	
793	
794	
795	
796	
797	
798	
799	
800	
801	
802	
803	
804	
805	
806	
807	
808	
809	
810	
811	
812	
813	
814	
815	
816	
817	
818	
819	
820	
821	
822	
823	
824	
825	
826	

	AO
1	
827	
828	
829	
830	
831	
832	
833	
834	
835	
836	
837	
838	
839	
840	
841	
842	
843	
844	
845	
846	
847	
848	
849	
850	
851	
852	
853	
854	
855	
856	
857	
858	
859	
860	
861	
862	
863	
864	
865	
866	
867	
868	
869	
870	
871	
872	
873	
874	
875	
876	
877	
878	
879	
880	
881	

	AO
1	
882	
883	
884	
885	
886	
887	
888	
889	
890	
891	
892	
893	
894	
895	
896	
897	
898	
899	
900	
901	
902	
903	
904	
905	
906	
907	
908	
909	
910	
911	
912	
913	
914	
915	
916	
917	
918	
919	
920	
921	
922	
923	
924	
925	
926	
927	
928	
929	
930	
931	
932	
933	
934	
935	
936	

	AO
1	
937	
938	
939	
940	
941	
942	
943	
944	
945	
946	
947	
948	
949	
950	
951	
952	
953	
954	
955	
956	
957	
958	
959	
960	
961	
962	
963	
964	
965	
966	
967	
968	
969	
970	
971	
972	
973	
974	
975	
976	
977	
978	
979	
980	
981	
982	
983	
984	
985	
986	
987	
988	
989	
990	
991	

	AO
1	
992	
993	
994	
995	
996	
997	
998	
999	
1000	
1001	
1002	
1003	
1004	
1005	
1006	
1007	
1008	
1009	
1010	
1011	
1012	
1013	
1014	
1015	
1016	
1017	
1018	
1019	
1020	
1021	
1022	
1023	
1024	
1025	
1026	
1027	
1028	
1029	
1030	
1031	
1032	
1033	
1034	
1035	
1036	
1037	
1038	
1039	
1040	
1041	
1042	
1043	
1044	
1045	
1046	

	AO
1	
1047	
1048	
1049	
1050	
1051	
1052	
1053	
1054	
1055	
1056	
1057	
1058	
1059	
1060	
1061	
1062	
1063	
1064	
1065	
1066	
1067	
1068	
1069	
1070	
1071	
1072	
1073	
1074	
1075	
1076	
1077	
1078	
1079	
1080	
1081	
1082	
1083	
1084	
1085	
1086	
1087	
1088	
1089	
1090	
1091	
1092	
1093	
1094	
1095	
1096	
1097	
1098	
1099	
1100	
1101	

	AO
1	
1102	
1103	
1104	
1105	
1106	
1107	
1108	
1109	
1110	
1111	
1112	
1113	
1114	
1115	
1116	
1117	
1118	
1119	
1120	
1121	
1122	
1123	
1124	
1125	
1126	
1127	
1128	
1129	
1130	
1131	
1132	
1133	
1134	
1135	
1136	
1137	
1138	
1139	
1140	
1141	
1142	
1143	
1144	
1145	
1146	
1147	
1148	
1149	
1150	
1151	
1152	
1153	
1154	
1155	
1156	

	AO
1	
1157	
1158	
1159	
1160	
1161	
1162	
1163	
1164	
1165	
1166	
1167	
1168	
1169	
1170	
1171	
1172	
1173	
1174	
1175	
1176	
1177	
1178	
1179	
1180	
1181	
1182	
1183	
1184	
1185	
1186	
1187	
1188	
1189	
1190	
1191	
1192	
1193	
1194	
1195	
1196	
1197	
1198	
1199	
1200	
1201	
1202	
1203	
1204	
1205	
1206	
1207	
1208	
1209	
1210	
1211	

	AO
1	
1212	
1213	
1214	
1215	
1216	
1217	
1218	
1219	
1220	
1221	
1222	
1223	
1224	
1225	
1226	
1227	
1228	
1229	
1230	
1231	
1232	
1233	
1234	
1235	
1236	
1237	
1238	
1239	
1240	
1241	
1242	
1243	
1244	
1245	
1246	
1247	
1248	
1249	
1250	
1251	
1252	
1253	
1254	
1255	
1256	
1257	
1258	
1259	
1260	
1261	
1262	
1263	
1264	
1265	
1266	

	AO
1	
1267	
1268	
1269	
1270	
1271	
1272	
1273	
1274	
1275	
1276	
1277	
1278	
1279	
1280	
1281	
1282	
1283	
1284	
1285	
1286	
1287	
1288	
1289	
1290	
1291	
1292	
1293	
1294	
1295	
1296	
1297	
1298	
1299	
1300	
1301	
1302	
1303	
1304	
1305	
1306	
1307	
1308	
1309	
1310	
1311	
1312	

Sample Number	Longitude (Decimal Degrees)	Latitude (Decimal Degrees)	Longitude (DMS)	Longitude (DMS)
1	-88.91876267	45.54648413	88 55' 7.55" W	45 32' 47.34" N
2	-88.91874887	45.54720409	88 55' 7.50" W	45 32' 49.93" N
3	-88.91873506	45.54792404	88 55' 7.45" W	45 32' 52.53" N
4	-88.91801427	45.53207528	88 55' 4.85" W	45 31' 55.47" N
5	-88.91800047	45.53279524	88 55' 4.80" W	45 31' 58.06" N
6	-88.91798666	45.53351520	88 55' 4.75" W	45 32' 0.65" N
7	-88.91797285	45.53423516	88 55' 4.70" W	45 32' 3.25" N
8	-88.91795904	45.53495511	88 55' 4.65" W	45 32' 5.84" N
9	-88.91794523	45.53567507	88 55' 4.60" W	45 32' 8.43" N
10	-88.91775185	45.54575447	88 55' 3.91" W	45 32' 44.72" N
11	-88.91773803	45.54647443	88 55' 3.86" W	45 32' 47.31" N
12	-88.91772422	45.54719438	88 55' 3.81" W	45 32' 49.90" N
13	-88.91771040	45.54791434	88 55' 3.76" W	45 32' 52.49" N
14	-88.91769658	45.54863429	88 55' 3.71" W	45 32' 55.08" N
15	-88.91710044	45.52630591	88 55' 1.56" W	45 31' 34.70" N
16	-88.91708662	45.52702587	88 55' 1.51" W	45 31' 37.29" N
17	-88.91703136	45.52990570	88 55' 1.31" W	45 31' 47.66" N
18	-88.91701754	45.53062566	88 55' 1.26" W	45 31' 50.25" N
19	-88.91700372	45.53134562	88 55' 1.21" W	45 31' 52.84" N
20	-88.91698990	45.53206557	88 55' 1.16" W	45 31' 55.44" N
21	-88.91697608	45.53278553	88 55' 1.11" W	45 31' 58.03" N
22	-88.91696226	45.53350549	88 55' 1.06" W	45 32' 0.62" N
23	-88.91694844	45.53422545	88 55' 1.01" W	45 32' 3.21" N
24	-88.91693462	45.53494540	88 55' 0.96" W	45 32' 5.80" N
25	-88.91692079	45.53566536	88 55' 0.91" W	45 32' 8.40" N
26	-88.91690697	45.53638532	88 55' 0.87" W	45 32' 10.99" N
27	-88.91689315	45.53710528	88 55' 0.82" W	45 32' 13.58" N
28	-88.91676871	45.54358489	88 55' 0.37" W	45 32' 36.91" N
29	-88.91675489	45.54430484	88 55' 0.32" W	45 32' 39.50" N
30	-88.91674106	45.54502480	88 55' 0.27" W	45 32' 42.09" N
31	-88.91672723	45.54574476	88 55' 0.22" W	45 32' 44.68" N
32	-88.91671340	45.54646471	88 55' 0.17" W	45 32' 47.27" N
33	-88.91669957	45.54718467	88 55' 0.12" W	45 32' 49.86" N
34	-88.91668574	45.54790463	88 55' 0.07" W	45 32' 52.46" N
35	-88.91667191	45.54862458	88 55' 0.02" W	45 32' 55.05" N
36	-88.91665807	45.54934454	88 54' 59.97" W	45 32' 57.64" N
37	-88.91657507	45.55366427	88 54' 59.67" W	45 33' 13.19" N
38	-88.91610383	45.52485627	88 54' 57.97" W	45 31' 29.48" N
39	-88.91609000	45.52557623	88 54' 57.92" W	45 31' 32.07" N
40	-88.91607617	45.52629619	88 54' 57.87" W	45 31' 34.67" N
41	-88.91606234	45.52701615	88 54' 57.82" W	45 31' 37.26" N
42	-88.91604851	45.52773611	88 54' 57.77" W	45 31' 39.85" N
43	-88.91602085	45.52917602	88 54' 57.68" W	45 31' 45.03" N
44	-88.91600702	45.52989598	88 54' 57.63" W	45 31' 47.63" N
45	-88.91599319	45.53061594	88 54' 57.58" W	45 31' 50.22" N
46	-88.91597936	45.53133590	88 54' 57.53" W	45 31' 52.81" N
47	-88.91596552	45.53205586	88 54' 57.48" W	45 31' 55.40" N
48	-88.91595169	45.53277581	88 54' 57.43" W	45 31' 57.99" N
49	-88.91593786	45.53349577	88 54' 57.38" W	45 32' 0.58" N
50	-88.91592402	45.53421573	88 54' 57.33" W	45 32' 3.18" N

Sample Number	Longitude (Decimal Degrees)	Latitude (Decimal Degrees)	Longitude (DMS)	Longitude (DMS)
51	-88.91591019	45.53493569	88 54' 57.28" W	45 32' 5.77" N
52	-88.91589635	45.53565564	88 54' 57.23" W	45 32' 8.36" N
53	-88.91588252	45.53637560	88 54' 57.18" W	45 32' 10.95" N
54	-88.91586868	45.53709556	88 54' 57.13" W	45 32' 13.54" N
55	-88.91585484	45.53781551	88 54' 57.08" W	45 32' 16.14" N
56	-88.91584101	45.53853547	88 54' 57.03" W	45 32' 18.73" N
57	-88.91582717	45.53925543	88 54' 56.98" W	45 32' 21.32" N
58	-88.91581333	45.53997538	88 54' 56.93" W	45 32' 23.91" N
59	-88.91579949	45.54069534	88 54' 56.88" W	45 32' 26.50" N
60	-88.91578565	45.54141530	88 54' 56.83" W	45 32' 29.10" N
61	-88.91577181	45.54213525	88 54' 56.78" W	45 32' 31.69" N
62	-88.91575797	45.54285521	88 54' 56.73" W	45 32' 34.28" N
63	-88.91574413	45.54357517	88 54' 56.68" W	45 32' 36.87" N
64	-88.91573029	45.54429512	88 54' 56.63" W	45 32' 39.46" N
65	-88.91571645	45.54501508	88 54' 56.58" W	45 32' 42.05" N
66	-88.91570261	45.54573503	88 54' 56.53" W	45 32' 44.65" N
67	-88.91568876	45.54645499	88 54' 56.48" W	45 32' 47.24" N
68	-88.91567492	45.54717495	88 54' 56.43" W	45 32' 49.83" N
69	-88.91566107	45.54789490	88 54' 56.38" W	45 32' 52.42" N
70	-88.91564723	45.54861486	88 54' 56.33" W	45 32' 55.01" N
71	-88.91563338	45.54933481	88 54' 56.28" W	45 32' 57.61" N
72	-88.91561954	45.55005477	88 54' 56.23" W	45 33' 0.20" N
73	-88.91557800	45.55221463	88 54' 56.08" W	45 33' 7.97" N
74	-88.91556415	45.55293459	88 54' 56.03" W	45 33' 10.56" N
75	-88.91555030	45.55365454	88 54' 55.98" W	45 33' 13.16" N
76	-88.91553645	45.55437450	88 54' 55.93" W	45 33' 15.75" N
77	-88.91552260	45.55509445	88 54' 55.88" W	45 33' 18.34" N
78	-88.91550875	45.55581441	88 54' 55.83" W	45 33' 20.93" N
79	-88.91549490	45.55653436	88 54' 55.78" W	45 33' 23.52" N
80	-88.91548105	45.55725432	88 54' 55.73" W	45 33' 26.12" N
81	-88.91507958	45.52484655	88 54' 54.29" W	45 31' 29.45" N
82	-88.91506574	45.52556651	88 54' 54.24" W	45 31' 32.04" N
83	-88.91505190	45.52628647	88 54' 54.19" W	45 31' 34.63" N
84	-88.91503806	45.52700642	88 54' 54.14" W	45 31' 37.22" N
85	-88.91502422	45.52772638	88 54' 54.09" W	45 31' 39.81" N
86	-88.91501037	45.52844634	88 54' 54.04" W	45 31' 42.41" N
87	-88.91499653	45.52916630	88 54' 53.99" W	45 31' 45.00" N
88	-88.91498269	45.52988626	88 54' 53.94" W	45 31' 47.59" N
89	-88.91496884	45.53060621	88 54' 53.89" W	45 31' 50.18" N
90	-88.91495500	45.53132617	88 54' 53.84" W	45 31' 52.77" N
91	-88.91494115	45.53204613	88 54' 53.79" W	45 31' 55.37" N
92	-88.91492730	45.53276609	88 54' 53.74" W	45 31' 57.96" N
93	-88.91491346	45.53348604	88 54' 53.69" W	45 32' 0.55" N
94	-88.91489961	45.53420600	88 54' 53.64" W	45 32' 3.14" N
95	-88.91488576	45.53492596	88 54' 53.59" W	45 32' 5.73" N
96	-88.91487191	45.53564591	88 54' 53.54" W	45 32' 8.33" N
97	-88.91485807	45.53636587	88 54' 53.49" W	45 32' 10.92" N
98	-88.91484422	45.53708583	88 54' 53.44" W	45 32' 13.51" N
99	-88.91483037	45.53780579	88 54' 53.39" W	45 32' 16.10" N
100	-88.91481652	45.53852574	88 54' 53.34" W	45 32' 18.69" N

Sample Number	Longitude (Decimal Degrees)	Latitude (Decimal Degrees)	Longitude (DMS)	Longitude (DMS)
101	-88.91480266	45.53924570	88 54' 53.29" W	45 32' 21.28" N
102	-88.91478881	45.53996566	88 54' 53.24" W	45 32' 23.88" N
103	-88.91477496	45.54068561	88 54' 53.19" W	45 32' 26.47" N
104	-88.91476111	45.54140557	88 54' 53.14" W	45 32' 29.06" N
105	-88.91474726	45.54212552	88 54' 53.09" W	45 32' 31.65" N
106	-88.91473340	45.54284548	88 54' 53.04" W	45 32' 34.24" N
107	-88.91471955	45.54356544	88 54' 52.99" W	45 32' 36.84" N
108	-88.91470569	45.54428539	88 54' 52.94" W	45 32' 39.43" N
109	-88.91469184	45.54500535	88 54' 52.89" W	45 32' 42.02" N
110	-88.91467798	45.54572530	88 54' 52.84" W	45 32' 44.61" N
111	-88.91466413	45.54644526	88 54' 52.79" W	45 32' 47.20" N
112	-88.91465027	45.54716521	88 54' 52.74" W	45 32' 49.79" N
113	-88.91463641	45.54788517	88 54' 52.69" W	45 32' 52.39" N
114	-88.91462256	45.54860513	88 54' 52.64" W	45 32' 54.98" N
115	-88.91460870	45.54932508	88 54' 52.59" W	45 32' 57.57" N
116	-88.91459484	45.55004504	88 54' 52.54" W	45 33' 0.16" N
117	-88.91458098	45.55076499	88 54' 52.49" W	45 33' 2.75" N
118	-88.91456712	45.55148495	88 54' 52.44" W	45 33' 5.35" N
119	-88.91455326	45.55220490	88 54' 52.39" W	45 33' 7.94" N
120	-88.91453940	45.55292486	88 54' 52.34" W	45 33' 10.53" N
121	-88.91452554	45.55364481	88 54' 52.29" W	45 33' 13.12" N
122	-88.91451167	45.55436476	88 54' 52.24" W	45 33' 15.71" N
123	-88.91449781	45.55508472	88 54' 52.19" W	45 33' 18.30" N
124	-88.91448395	45.55580467	88 54' 52.14" W	45 33' 20.90" N
125	-88.91447009	45.55652463	88 54' 52.09" W	45 33' 23.49" N
126	-88.91445622	45.55724458	88 54' 52.04" W	45 33' 26.08" N
127	-88.91444236	45.55796454	88 54' 51.99" W	45 33' 28.67" N
128	-88.91406919	45.52411686	88 54' 50.65" W	45 31' 26.82" N
129	-88.91405534	45.52483682	88 54' 50.60" W	45 31' 29.41" N
130	-88.91404149	45.52555677	88 54' 50.55" W	45 31' 32.00" N
131	-88.91402763	45.52627673	88 54' 50.50" W	45 31' 34.60" N
132	-88.91401378	45.52699669	88 54' 50.45" W	45 31' 37.19" N
133	-88.91399992	45.52771665	88 54' 50.40" W	45 31' 39.78" N
134	-88.91398606	45.52843661	88 54' 50.35" W	45 31' 42.37" N
135	-88.91397221	45.52915656	88 54' 50.30" W	45 31' 44.96" N
136	-88.91395835	45.52987652	88 54' 50.25" W	45 31' 47.56" N
137	-88.91394449	45.53059648	88 54' 50.20" W	45 31' 50.15" N
138	-88.91393064	45.53131644	88 54' 50.15" W	45 31' 52.74" N
139	-88.91391678	45.53203639	88 54' 50.10" W	45 31' 55.33" N
140	-88.91390292	45.53275635	88 54' 50.05" W	45 31' 57.92" N
141	-88.91388906	45.53347631	88 54' 50.00" W	45 32' 0.51" N
142	-88.91387520	45.53419626	88 54' 49.95" W	45 32' 3.11" N
143	-88.91386134	45.53491622	88 54' 49.90" W	45 32' 5.70" N
144	-88.91384748	45.53563618	88 54' 49.85" W	45 32' 8.29" N
145	-88.91383361	45.53635613	88 54' 49.80" W	45 32' 10.88" N
146	-88.91381975	45.53707609	88 54' 49.75" W	45 32' 13.47" N
147	-88.91380589	45.53779605	88 54' 49.70" W	45 32' 16.07" N
148	-88.91379202	45.53851600	88 54' 49.65" W	45 32' 18.66" N
149	-88.91377816	45.53923596	88 54' 49.60" W	45 32' 21.25" N
150	-88.91376430	45.53995592	88 54' 49.55" W	45 32' 23.84" N

Sample Number	Longitude (Decimal Degrees)	Latitude (Decimal Degrees)	Longitude (DMS)	Longitude (DMS)
151	-88.91375043	45.54067587	88 54' 49.50" W	45 32' 26.43" N
152	-88.91373657	45.54139583	88 54' 49.45" W	45 32' 29.02" N
153	-88.91372270	45.54211578	88 54' 49.40" W	45 32' 31.62" N
154	-88.91370883	45.54283574	88 54' 49.35" W	45 32' 34.21" N
155	-88.91369497	45.54355570	88 54' 49.30" W	45 32' 36.80" N
156	-88.91368110	45.54427565	88 54' 49.25" W	45 32' 39.39" N
157	-88.91366723	45.54499561	88 54' 49.20" W	45 32' 41.98" N
158	-88.91365336	45.54571556	88 54' 49.15" W	45 32' 44.58" N
159	-88.91363949	45.54643552	88 54' 49.10" W	45 32' 47.17" N
160	-88.91362562	45.54715547	88 54' 49.05" W	45 32' 49.76" N
161	-88.91361175	45.54787543	88 54' 49.00" W	45 32' 52.35" N
162	-88.91359788	45.54859538	88 54' 48.95" W	45 32' 54.94" N
163	-88.91358401	45.54931534	88 54' 48.90" W	45 32' 57.54" N
164	-88.91357014	45.55003529	88 54' 48.85" W	45 33' 0.13" N
165	-88.91355627	45.55075525	88 54' 48.80" W	45 33' 2.72" N
166	-88.91354239	45.55147520	88 54' 48.75" W	45 33' 5.31" N
167	-88.91352852	45.55219516	88 54' 48.70" W	45 33' 7.90" N
168	-88.91351465	45.55291511	88 54' 48.65" W	45 33' 10.49" N
169	-88.91350077	45.55363507	88 54' 48.60" W	45 33' 13.09" N
170	-88.91348690	45.55435502	88 54' 48.55" W	45 33' 15.68" N
171	-88.91347302	45.55507498	88 54' 48.50" W	45 33' 18.27" N
172	-88.91345914	45.55579493	88 54' 48.45" W	45 33' 20.86" N
173	-88.91344527	45.55651488	88 54' 48.40" W	45 33' 23.45" N
174	-88.91343139	45.55723484	88 54' 48.35" W	45 33' 26.05" N
175	-88.91341751	45.55795479	88 54' 48.30" W	45 33' 28.64" N
176	-88.91340363	45.55867475	88 54' 48.25" W	45 33' 31.23" N
177	-88.91338976	45.55939470	88 54' 48.20" W	45 33' 33.82" N
178	-88.91337588	45.56011465	88 54' 48.15" W	45 33' 36.41" N
179	-88.91336200	45.56083461	88 54' 48.10" W	45 33' 39.00" N
180	-88.91334812	45.56155456	88 54' 48.05" W	45 33' 41.60" N
181	-88.91305883	45.52338716	88 54' 47.01" W	45 31' 24.19" N
182	-88.91304496	45.52410712	88 54' 46.96" W	45 31' 26.79" N
183	-88.91303110	45.52482707	88 54' 46.91" W	45 31' 29.38" N
184	-88.91301723	45.52554703	88 54' 46.86" W	45 31' 31.97" N
185	-88.91300336	45.52626699	88 54' 46.81" W	45 31' 34.56" N
186	-88.91298950	45.52698695	88 54' 46.76" W	45 31' 37.15" N
187	-88.91297563	45.52770690	88 54' 46.71" W	45 31' 39.74" N
188	-88.91296176	45.52842686	88 54' 46.66" W	45 31' 42.34" N
189	-88.91294789	45.52914682	88 54' 46.61" W	45 31' 44.93" N
190	-88.91293402	45.52986678	88 54' 46.56" W	45 31' 47.52" N
191	-88.91292015	45.53058673	88 54' 46.51" W	45 31' 50.11" N
192	-88.91290628	45.53130669	88 54' 46.46" W	45 31' 52.70" N
193	-88.91289240	45.53202665	88 54' 46.41" W	45 31' 55.30" N
194	-88.91287853	45.53274660	88 54' 46.36" W	45 31' 57.89" N
195	-88.91286466	45.53346656	88 54' 46.31" W	45 32' 0.48" N
196	-88.91285079	45.53418652	88 54' 46.26" W	45 32' 3.07" N
197	-88.91283691	45.53490647	88 54' 46.21" W	45 32' 5.66" N
198	-88.91282304	45.53562643	88 54' 46.16" W	45 32' 8.26" N
199	-88.91280916	45.53634639	88 54' 46.11" W	45 32' 10.85" N
200	-88.91279529	45.53706634	88 54' 46.06" W	45 32' 13.44" N

Sample Number	Longitude (Decimal Degrees)	Latitude (Decimal Degrees)	Longitude (DMS)	Longitude (DMS)
201	-88.91278141	45.53778630	88 54' 46.01" W	45 32' 16.03" N
202	-88.91276753	45.53850626	88 54' 45.96" W	45 32' 18.62" N
203	-88.91275366	45.53922621	88 54' 45.91" W	45 32' 21.21" N
204	-88.91273978	45.53994617	88 54' 45.86" W	45 32' 23.81" N
205	-88.91272590	45.54066612	88 54' 45.81" W	45 32' 26.40" N
206	-88.91271202	45.54138608	88 54' 45.76" W	45 32' 28.99" N
207	-88.91269814	45.54210604	88 54' 45.71" W	45 32' 31.58" N
208	-88.91268426	45.54282599	88 54' 45.66" W	45 32' 34.17" N
209	-88.91267038	45.54354595	88 54' 45.61" W	45 32' 36.77" N
210	-88.91265650	45.54426590	88 54' 45.56" W	45 32' 39.36" N
211	-88.91264262	45.54498586	88 54' 45.51" W	45 32' 41.95" N
212	-88.91262874	45.54570581	88 54' 45.46" W	45 32' 44.54" N
213	-88.91261486	45.54642577	88 54' 45.41" W	45 32' 47.13" N
214	-88.91260097	45.54714572	88 54' 45.36" W	45 32' 49.72" N
215	-88.91258709	45.54786568	88 54' 45.31" W	45 32' 52.32" N
216	-88.91257321	45.54858563	88 54' 45.26" W	45 32' 54.91" N
217	-88.91255932	45.54930559	88 54' 45.21" W	45 32' 57.50" N
218	-88.91254544	45.55002554	88 54' 45.16" W	45 33' 0.09" N
219	-88.91253155	45.55074550	88 54' 45.11" W	45 33' 2.68" N
220	-88.91251767	45.55146545	88 54' 45.06" W	45 33' 5.28" N
221	-88.91250378	45.55218541	88 54' 45.01" W	45 33' 7.87" N
222	-88.91248989	45.55290536	88 54' 44.96" W	45 33' 10.46" N
223	-88.91247601	45.55362531	88 54' 44.91" W	45 33' 13.05" N
224	-88.91246212	45.55434527	88 54' 44.86" W	45 33' 15.64" N
225	-88.91244823	45.55506522	88 54' 44.81" W	45 33' 18.23" N
226	-88.91243434	45.55578518	88 54' 44.76" W	45 33' 20.83" N
227	-88.91242045	45.55650513	88 54' 44.71" W	45 33' 23.42" N
228	-88.91240656	45.55722508	88 54' 44.66" W	45 33' 26.01" N
229	-88.91239267	45.55794504	88 54' 44.61" W	45 33' 28.60" N
230	-88.91237878	45.55866499	88 54' 44.56" W	45 33' 31.19" N
231	-88.91236489	45.55938494	88 54' 44.51" W	45 33' 33.79" N
232	-88.91235099	45.56010490	88 54' 44.46" W	45 33' 36.38" N
233	-88.91233710	45.56082485	88 54' 44.41" W	45 33' 38.97" N
234	-88.91232321	45.56154480	88 54' 44.36" W	45 33' 41.56" N
235	-88.91200686	45.52481732	88 54' 43.22" W	45 31' 29.34" N
236	-88.91199298	45.52553728	88 54' 43.17" W	45 31' 31.93" N
237	-88.91197910	45.52625724	88 54' 43.12" W	45 31' 34.53" N
238	-88.91196521	45.52697719	88 54' 43.07" W	45 31' 37.12" N
239	-88.91195133	45.52769715	88 54' 43.02" W	45 31' 39.71" N
240	-88.91193745	45.52841711	88 54' 42.97" W	45 31' 42.30" N
241	-88.91192357	45.52913707	88 54' 42.92" W	45 31' 44.89" N
242	-88.91190968	45.52985702	88 54' 42.87" W	45 31' 47.49" N
243	-88.91189580	45.53057698	88 54' 42.82" W	45 31' 50.08" N
244	-88.91188192	45.53129694	88 54' 42.77" W	45 31' 52.67" N
245	-88.91186803	45.53201689	88 54' 42.72" W	45 31' 55.26" N
246	-88.91185415	45.53273685	88 54' 42.67" W	45 31' 57.85" N
247	-88.91184026	45.53345681	88 54' 42.62" W	45 32' 0.44" N
248	-88.91182637	45.53417676	88 54' 42.57" W	45 32' 3.04" N
249	-88.91181249	45.53489672	88 54' 42.52" W	45 32' 5.63" N
250	-88.91179860	45.53561668	88 54' 42.47" W	45 32' 8.22" N

Sample Number	Longitude (Decimal Degrees)	Latitude (Decimal Degrees)	Longitude (DMS)	Longitude (DMS)
251	-88.91178471	45.53633663	88 54' 42.42" W	45 32' 10.81" N
252	-88.91177082	45.53705659	88 54' 42.37" W	45 32' 13.40" N
253	-88.91175693	45.53777654	88 54' 42.32" W	45 32' 16.00" N
254	-88.91174304	45.53849650	88 54' 42.27" W	45 32' 18.59" N
255	-88.91172915	45.53921646	88 54' 42.22" W	45 32' 21.18" N
256	-88.91171526	45.53993641	88 54' 42.17" W	45 32' 23.77" N
257	-88.91170137	45.54065637	88 54' 42.12" W	45 32' 26.36" N
258	-88.91168748	45.54137632	88 54' 42.07" W	45 32' 28.95" N
259	-88.91167359	45.54209628	88 54' 42.02" W	45 32' 31.55" N
260	-88.91165970	45.54281623	88 54' 41.97" W	45 32' 34.14" N
261	-88.91164580	45.54353619	88 54' 41.92" W	45 32' 36.73" N
262	-88.91163191	45.54425614	88 54' 41.87" W	45 32' 39.32" N
263	-88.91161801	45.54497610	88 54' 41.82" W	45 32' 41.91" N
264	-88.91160412	45.54569605	88 54' 41.77" W	45 32' 44.51" N
265	-88.91159022	45.54641601	88 54' 41.72" W	45 32' 47.10" N
266	-88.91157633	45.54713596	88 54' 41.67" W	45 32' 49.69" N
267	-88.91156243	45.54785592	88 54' 41.62" W	45 32' 52.28" N
268	-88.91154853	45.54857587	88 54' 41.57" W	45 32' 54.87" N
269	-88.91153464	45.54929583	88 54' 41.52" W	45 32' 57.46" N
270	-88.91152074	45.55001578	88 54' 41.47" W	45 33' 0.06" N
271	-88.91150684	45.55073574	88 54' 41.42" W	45 33' 2.65" N
272	-88.91149294	45.55145569	88 54' 41.37" W	45 33' 5.24" N
273	-88.91147904	45.55217565	88 54' 41.32" W	45 33' 7.83" N
274	-88.91146514	45.55289560	88 54' 41.27" W	45 33' 10.42" N
275	-88.91145124	45.55361555	88 54' 41.22" W	45 33' 13.02" N
276	-88.91143734	45.55433551	88 54' 41.17" W	45 33' 15.61" N
277	-88.91142344	45.55505546	88 54' 41.12" W	45 33' 18.20" N
278	-88.91140954	45.55577541	88 54' 41.07" W	45 33' 20.79" N
279	-88.91139563	45.55649537	88 54' 41.02" W	45 33' 23.38" N
280	-88.91138173	45.55721532	88 54' 40.97" W	45 33' 25.98" N
281	-88.91136783	45.55793527	88 54' 40.92" W	45 33' 28.57" N
282	-88.91135392	45.55865523	88 54' 40.87" W	45 33' 31.16" N
283	-88.91134002	45.55937518	88 54' 40.82" W	45 33' 33.75" N
284	-88.91132611	45.56009513	88 54' 40.77" W	45 33' 36.34" N
285	-88.91131221	45.56081509	88 54' 40.72" W	45 33' 38.93" N
286	-88.91129830	45.56153504	88 54' 40.67" W	45 33' 41.53" N
287	-88.91128439	45.56225499	88 54' 40.62" W	45 33' 44.12" N
288	-88.91099651	45.52408760	88 54' 39.59" W	45 31' 26.72" N
289	-88.91098261	45.52480756	88 54' 39.54" W	45 31' 29.31" N
290	-88.91096872	45.52552752	88 54' 39.49" W	45 31' 31.90" N
291	-88.91095483	45.52624748	88 54' 39.44" W	45 31' 34.49" N
292	-88.91094093	45.52696743	88 54' 39.39" W	45 31' 37.08" N
293	-88.91092704	45.52768739	88 54' 39.34" W	45 31' 39.67" N
294	-88.91091314	45.52840735	88 54' 39.29" W	45 31' 42.27" N
295	-88.91089925	45.52912730	88 54' 39.24" W	45 31' 44.86" N
296	-88.91088535	45.52984726	88 54' 39.19" W	45 31' 47.45" N
297	-88.91087145	45.53056722	88 54' 39.14" W	45 31' 50.04" N
298	-88.91085756	45.53128717	88 54' 39.09" W	45 31' 52.63" N
299	-88.91084366	45.53200713	88 54' 39.04" W	45 31' 55.23" N
300	-88.91082976	45.53272709	88 54' 38.99" W	45 31' 57.82" N

Sample Number	Longitude (Decimal Degrees)	Latitude (Decimal Degrees)	Longitude (DMS)	Longitude (DMS)
301	-88.91081586	45.53344704	88 54' 38.94" W	45 32' 0.41" N
302	-88.91080196	45.53416700	88 54' 38.89" W	45 32' 3.00" N
303	-88.91078806	45.53488696	88 54' 38.84" W	45 32' 5.59" N
304	-88.91077416	45.53560691	88 54' 38.79" W	45 32' 8.18" N
305	-88.91076026	45.53632687	88 54' 38.74" W	45 32' 10.78" N
306	-88.91074636	45.53704682	88 54' 38.69" W	45 32' 13.37" N
307	-88.91073246	45.53776678	88 54' 38.64" W	45 32' 15.96" N
308	-88.91071855	45.53848673	88 54' 38.59" W	45 32' 18.55" N
309	-88.91070465	45.53920669	88 54' 38.54" W	45 32' 21.14" N
310	-88.91069075	45.53992665	88 54' 38.49" W	45 32' 23.74" N
311	-88.91067684	45.54064660	88 54' 38.44" W	45 32' 26.33" N
312	-88.91066294	45.54136656	88 54' 38.39" W	45 32' 28.92" N
313	-88.91064903	45.54208651	88 54' 38.34" W	45 32' 31.51" N
314	-88.91063513	45.54280647	88 54' 38.29" W	45 32' 34.10" N
315	-88.91062122	45.54352642	88 54' 38.24" W	45 32' 36.70" N
316	-88.91060731	45.54424638	88 54' 38.19" W	45 32' 39.29" N
317	-88.91059341	45.54496633	88 54' 38.14" W	45 32' 41.88" N
318	-88.91057950	45.54568629	88 54' 38.09" W	45 32' 44.47" N
319	-88.91056559	45.54640624	88 54' 38.04" W	45 32' 47.06" N
320	-88.91055168	45.54712620	88 54' 37.99" W	45 32' 49.65" N
321	-88.91053777	45.54784615	88 54' 37.94" W	45 32' 52.25" N
322	-88.91052386	45.54856610	88 54' 37.89" W	45 32' 54.84" N
323	-88.91050995	45.54928606	88 54' 37.84" W	45 32' 57.43" N
324	-88.91049604	45.55000601	88 54' 37.79" W	45 33' 0.02" N
325	-88.91048213	45.55072597	88 54' 37.74" W	45 33' 2.61" N
326	-88.91046822	45.55144592	88 54' 37.69" W	45 33' 5.21" N
327	-88.91045430	45.55216587	88 54' 37.64" W	45 33' 7.80" N
328	-88.91044039	45.55288583	88 54' 37.59" W	45 33' 10.39" N
329	-88.91042648	45.55360578	88 54' 37.54" W	45 33' 12.98" N
330	-88.91041256	45.55432574	88 54' 37.49" W	45 33' 15.57" N
331	-88.91039865	45.55504569	88 54' 37.44" W	45 33' 18.16" N
332	-88.91038473	45.55576564	88 54' 37.39" W	45 33' 20.76" N
333	-88.91037082	45.55648560	88 54' 37.33" W	45 33' 23.35" N
334	-88.91035690	45.55720555	88 54' 37.28" W	45 33' 25.94" N
335	-88.91034298	45.55792550	88 54' 37.23" W	45 33' 28.53" N
336	-88.91032907	45.55864546	88 54' 37.18" W	45 33' 31.12" N
337	-88.91031515	45.55936541	88 54' 37.13" W	45 33' 33.72" N
338	-88.91030123	45.56008536	88 54' 37.08" W	45 33' 36.31" N
339	-88.91028731	45.56080531	88 54' 37.03" W	45 33' 38.90" N
340	-88.91027339	45.56152527	88 54' 36.98" W	45 33' 41.49" N
341	-88.91025947	45.56224522	88 54' 36.93" W	45 33' 44.08" N
342	-88.90998618	45.52335788	88 54' 35.95" W	45 31' 24.09" N
343	-88.90997228	45.52407783	88 54' 35.90" W	45 31' 26.68" N
344	-88.90995837	45.52479779	88 54' 35.85" W	45 31' 29.27" N
345	-88.90994447	45.52551775	88 54' 35.80" W	45 31' 31.86" N
346	-88.90993056	45.52623770	88 54' 35.75" W	45 31' 34.46" N
347	-88.90991665	45.52695766	88 54' 35.70" W	45 31' 37.05" N
348	-88.90990275	45.52767762	88 54' 35.65" W	45 31' 39.64" N
349	-88.90988884	45.52839758	88 54' 35.60" W	45 31' 42.23" N
350	-88.90987493	45.52911753	88 54' 35.55" W	45 31' 44.82" N

Sample Number	Longitude (Decimal Degrees)	Latitude (Decimal Degrees)	Longitude (DMS)	Longitude (DMS)
351	-88.90986102	45.52983749	88 54' 35.50" W	45 31' 47.41" N
352	-88.90984711	45.53055744	88 54' 35.45" W	45 31' 50.01" N
353	-88.90983320	45.53127740	88 54' 35.40" W	45 31' 52.60" N
354	-88.90981929	45.53199736	88 54' 35.35" W	45 31' 55.19" N
355	-88.90980538	45.53271731	88 54' 35.30" W	45 31' 57.78" N
356	-88.90979146	45.53343727	88 54' 35.25" W	45 32' 0.37" N
357	-88.90977755	45.53415723	88 54' 35.20" W	45 32' 2.97" N
358	-88.90976364	45.53487718	88 54' 35.15" W	45 32' 5.56" N
359	-88.90974973	45.53559714	88 54' 35.10" W	45 32' 8.15" N
360	-88.90973581	45.53631709	88 54' 35.05" W	45 32' 10.74" N
361	-88.90972190	45.53703705	88 54' 35.00" W	45 32' 13.33" N
362	-88.90970798	45.53775700	88 54' 34.95" W	45 32' 15.93" N
363	-88.90969407	45.53847696	88 54' 34.90" W	45 32' 18.52" N
364	-88.90968015	45.53919692	88 54' 34.85" W	45 32' 21.11" N
365	-88.90966623	45.53991687	88 54' 34.80" W	45 32' 23.70" N
366	-88.90965231	45.54063683	88 54' 34.75" W	45 32' 26.29" N
367	-88.90963840	45.54135678	88 54' 34.70" W	45 32' 28.88" N
368	-88.90962448	45.54207674	88 54' 34.65" W	45 32' 31.48" N
369	-88.90961056	45.54279669	88 54' 34.60" W	45 32' 34.07" N
370	-88.90959664	45.54351665	88 54' 34.55" W	45 32' 36.66" N
371	-88.90958272	45.54423660	88 54' 34.50" W	45 32' 39.25" N
372	-88.90956880	45.54495655	88 54' 34.45" W	45 32' 41.84" N
373	-88.90955488	45.54567651	88 54' 34.40" W	45 32' 44.44" N
374	-88.90954096	45.54639646	88 54' 34.35" W	45 32' 47.03" N
375	-88.90952704	45.54711642	88 54' 34.30" W	45 32' 49.62" N
376	-88.90951311	45.54783637	88 54' 34.25" W	45 32' 52.21" N
377	-88.90949919	45.54855633	88 54' 34.20" W	45 32' 54.80" N
378	-88.90948527	45.54927628	88 54' 34.15" W	45 32' 57.39" N
379	-88.90947134	45.54999623	88 54' 34.10" W	45 32' 59.99" N
380	-88.90945742	45.55071619	88 54' 34.05" W	45 33' 2.58" N
381	-88.90944349	45.55143614	88 54' 34.00" W	45 33' 5.17" N
382	-88.90942957	45.55215610	88 54' 33.95" W	45 33' 7.76" N
383	-88.90941564	45.55287605	88 54' 33.90" W	45 33' 10.35" N
384	-88.90940171	45.55359600	88 54' 33.85" W	45 33' 12.95" N
385	-88.90938779	45.55431596	88 54' 33.80" W	45 33' 15.54" N
386	-88.90937386	45.55503591	88 54' 33.75" W	45 33' 18.13" N
387	-88.90935993	45.55575586	88 54' 33.70" W	45 33' 20.72" N
388	-88.90934600	45.55647582	88 54' 33.65" W	45 33' 23.31" N
389	-88.90933207	45.55719577	88 54' 33.60" W	45 33' 25.90" N
390	-88.90931814	45.55791572	88 54' 33.55" W	45 33' 28.50" N
391	-88.90930421	45.55863567	88 54' 33.50" W	45 33' 31.09" N
392	-88.90929028	45.55935563	88 54' 33.45" W	45 33' 33.68" N
393	-88.90927635	45.56007558	88 54' 33.39" W	45 33' 36.27" N
394	-88.90926242	45.56079553	88 54' 33.34" W	45 33' 38.86" N
395	-88.90924848	45.56151548	88 54' 33.29" W	45 33' 41.46" N
396	-88.90923455	45.56223544	88 54' 33.24" W	45 33' 44.05" N
397	-88.90898981	45.52190818	88 54' 32.36" W	45 31' 18.87" N
398	-88.90897589	45.52262814	88 54' 32.31" W	45 31' 21.46" N
399	-88.90896197	45.52334810	88 54' 32.26" W	45 31' 24.05" N
400	-88.90894805	45.52406805	88 54' 32.21" W	45 31' 26.64" N

Sample Number	Longitude (Decimal Degrees)	Latitude (Decimal Degrees)	Longitude (DMS)	Longitude (DMS)
401	-88.90893413	45.52478801	88 54' 32.16" W	45 31' 29.24" N
402	-88.90892021	45.52550797	88 54' 32.11" W	45 31' 31.83" N
403	-88.90890629	45.52622792	88 54' 32.06" W	45 31' 34.42" N
404	-88.90889237	45.52694788	88 54' 32.01" W	45 31' 37.01" N
405	-88.90887845	45.52766784	88 54' 31.96" W	45 31' 39.60" N
406	-88.90886453	45.52838779	88 54' 31.91" W	45 31' 42.20" N
407	-88.90885061	45.52910775	88 54' 31.86" W	45 31' 44.79" N
408	-88.90883669	45.52982771	88 54' 31.81" W	45 31' 47.38" N
409	-88.90882276	45.53054766	88 54' 31.76" W	45 31' 49.97" N
410	-88.90880884	45.53126762	88 54' 31.71" W	45 31' 52.56" N
411	-88.90879492	45.53198758	88 54' 31.66" W	45 31' 55.16" N
412	-88.90878099	45.53270753	88 54' 31.61" W	45 31' 57.75" N
413	-88.90876707	45.53342749	88 54' 31.56" W	45 32' 0.34" N
414	-88.90875314	45.53414744	88 54' 31.51" W	45 32' 2.93" N
415	-88.90873922	45.53486740	88 54' 31.46" W	45 32' 5.52" N
416	-88.90872529	45.53558735	88 54' 31.41" W	45 32' 8.11" N
417	-88.90871136	45.53630731	88 54' 31.36" W	45 32' 10.71" N
418	-88.90869743	45.53702727	88 54' 31.31" W	45 32' 13.30" N
419	-88.90868351	45.53774722	88 54' 31.26" W	45 32' 15.89" N
420	-88.90866958	45.53846718	88 54' 31.21" W	45 32' 18.48" N
421	-88.90865565	45.53918713	88 54' 31.16" W	45 32' 21.07" N
422	-88.90864172	45.53990709	88 54' 31.11" W	45 32' 23.67" N
423	-88.90862779	45.54062704	88 54' 31.06" W	45 32' 26.26" N
424	-88.90861386	45.54134700	88 54' 31.01" W	45 32' 28.85" N
425	-88.90859992	45.54206695	88 54' 30.96" W	45 32' 31.44" N
426	-88.90858599	45.54278691	88 54' 30.91" W	45 32' 34.03" N
427	-88.90857206	45.54350686	88 54' 30.86" W	45 32' 36.62" N
428	-88.90855813	45.54422681	88 54' 30.81" W	45 32' 39.22" N
429	-88.90854419	45.54494677	88 54' 30.76" W	45 32' 41.81" N
430	-88.90853026	45.54566672	88 54' 30.71" W	45 32' 44.40" N
431	-88.90851633	45.54638668	88 54' 30.66" W	45 32' 46.99" N
432	-88.90850239	45.54710663	88 54' 30.61" W	45 32' 49.58" N
433	-88.90848845	45.54782658	88 54' 30.56" W	45 32' 52.18" N
434	-88.90847452	45.54854654	88 54' 30.51" W	45 32' 54.77" N
435	-88.90846058	45.54926649	88 54' 30.46" W	45 32' 57.36" N
436	-88.90844664	45.54998645	88 54' 30.41" W	45 32' 59.95" N
437	-88.90843271	45.55070640	88 54' 30.36" W	45 33' 2.54" N
438	-88.90841877	45.55142635	88 54' 30.31" W	45 33' 5.13" N
439	-88.90840483	45.55214631	88 54' 30.26" W	45 33' 7.73" N
440	-88.90839089	45.55286626	88 54' 30.21" W	45 33' 10.32" N
441	-88.90837695	45.55358621	88 54' 30.16" W	45 33' 12.91" N
442	-88.90836301	45.55430617	88 54' 30.11" W	45 33' 15.50" N
443	-88.90834907	45.55502612	88 54' 30.06" W	45 33' 18.09" N
444	-88.90833513	45.55574607	88 54' 30.01" W	45 33' 20.69" N
445	-88.90832119	45.55646603	88 54' 29.96" W	45 33' 23.28" N
446	-88.90830724	45.55718598	88 54' 29.91" W	45 33' 25.87" N
447	-88.90829330	45.55790593	88 54' 29.86" W	45 33' 28.46" N
448	-88.90827936	45.55862588	88 54' 29.81" W	45 33' 31.05" N
449	-88.90826541	45.55934584	88 54' 29.76" W	45 33' 33.65" N
450	-88.90825147	45.56006579	88 54' 29.71" W	45 33' 36.24" N

Sample Number	Longitude (Decimal Degrees)	Latitude (Decimal Degrees)	Longitude (DMS)	Longitude (DMS)
451	-88.90823752	45.56078574	88 54' 29.66" W	45 33' 38.83" N
452	-88.90822358	45.56150569	88 54' 29.60" W	45 33' 41.42" N
453	-88.90820963	45.56222564	88 54' 29.55" W	45 33' 44.01" N
454	-88.90796562	45.52189839	88 54' 28.68" W	45 31' 18.83" N
455	-88.90795169	45.52261835	88 54' 28.63" W	45 31' 21.43" N
456	-88.90793776	45.52333831	88 54' 28.58" W	45 31' 24.02" N
457	-88.90792383	45.52405827	88 54' 28.53" W	45 31' 26.61" N
458	-88.90790989	45.52477822	88 54' 28.48" W	45 31' 29.20" N
459	-88.90789596	45.52549818	88 54' 28.43" W	45 31' 31.79" N
460	-88.90788203	45.52621814	88 54' 28.38" W	45 31' 34.39" N
461	-88.90786810	45.52693809	88 54' 28.33" W	45 31' 36.98" N
462	-88.90785416	45.52765805	88 54' 28.27" W	45 31' 39.57" N
463	-88.90784023	45.52837800	88 54' 28.22" W	45 31' 42.16" N
464	-88.90782629	45.52909796	88 54' 28.17" W	45 31' 44.75" N
465	-88.90781236	45.52981792	88 54' 28.12" W	45 31' 47.34" N
466	-88.90779842	45.53053787	88 54' 28.07" W	45 31' 49.94" N
467	-88.90778448	45.53125783	88 54' 28.02" W	45 31' 52.53" N
468	-88.90777055	45.53197778	88 54' 27.97" W	45 31' 55.12" N
469	-88.90775661	45.53269774	88 54' 27.92" W	45 31' 57.71" N
470	-88.90774267	45.53341770	88 54' 27.87" W	45 32' 0.30" N
471	-88.90772873	45.53413765	88 54' 27.82" W	45 32' 2.90" N
472	-88.90771479	45.53485761	88 54' 27.77" W	45 32' 5.49" N
473	-88.90770085	45.53557756	88 54' 27.72" W	45 32' 8.08" N
474	-88.90768691	45.53629752	88 54' 27.67" W	45 32' 10.67" N
475	-88.90767297	45.53701747	88 54' 27.62" W	45 32' 13.26" N
476	-88.90765903	45.53773743	88 54' 27.57" W	45 32' 15.85" N
477	-88.90764509	45.53845738	88 54' 27.52" W	45 32' 18.45" N
478	-88.90763115	45.53917734	88 54' 27.47" W	45 32' 21.04" N
479	-88.90761720	45.53989729	88 54' 27.42" W	45 32' 23.63" N
480	-88.90760326	45.54061725	88 54' 27.37" W	45 32' 26.22" N
481	-88.90758932	45.54133720	88 54' 27.32" W	45 32' 28.81" N
482	-88.90757537	45.54205716	88 54' 27.27" W	45 32' 31.41" N
483	-88.90756143	45.54277711	88 54' 27.22" W	45 32' 34.00" N
484	-88.90754748	45.54349706	88 54' 27.17" W	45 32' 36.59" N
485	-88.90753353	45.54421702	88 54' 27.12" W	45 32' 39.18" N
486	-88.90751959	45.54493697	88 54' 27.07" W	45 32' 41.77" N
487	-88.90750564	45.54565693	88 54' 27.02" W	45 32' 44.36" N
488	-88.90749169	45.54637688	88 54' 26.97" W	45 32' 46.96" N
489	-88.90747775	45.54709683	88 54' 26.92" W	45 32' 49.55" N
490	-88.90746380	45.54781679	88 54' 26.87" W	45 32' 52.14" N
491	-88.90744985	45.54853674	88 54' 26.82" W	45 32' 54.73" N
492	-88.90743590	45.54925670	88 54' 26.77" W	45 32' 57.32" N
493	-88.90742195	45.54997665	88 54' 26.72" W	45 32' 59.92" N
494	-88.90740800	45.55069660	88 54' 26.67" W	45 33' 2.51" N
495	-88.90739405	45.55141656	88 54' 26.62" W	45 33' 5.10" N
496	-88.90738009	45.55213651	88 54' 26.57" W	45 33' 7.69" N
497	-88.90736614	45.55285646	88 54' 26.52" W	45 33' 10.28" N
498	-88.90735219	45.55357642	88 54' 26.47" W	45 33' 12.88" N
499	-88.90733823	45.55429637	88 54' 26.42" W	45 33' 15.47" N
500	-88.90732428	45.55501632	88 54' 26.37" W	45 33' 18.06" N

Sample Number	Longitude (Decimal Degrees)	Latitude (Decimal Degrees)	Longitude (DMS)	Longitude (DMS)
501	-88.90731033	45.55573627	88 54' 26.32" W	45 33' 20.65" N
502	-88.90729637	45.55645623	88 54' 26.27" W	45 33' 23.24" N
503	-88.90728242	45.55717618	88 54' 26.22" W	45 33' 25.83" N
504	-88.90726846	45.55789613	88 54' 26.17" W	45 33' 28.43" N
505	-88.90725450	45.55861608	88 54' 26.12" W	45 33' 31.02" N
506	-88.90724055	45.55933604	88 54' 26.07" W	45 33' 33.61" N
507	-88.90722659	45.56005599	88 54' 26.02" W	45 33' 36.20" N
508	-88.90721263	45.56077594	88 54' 25.97" W	45 33' 38.79" N
509	-88.90719867	45.56149589	88 54' 25.92" W	45 33' 41.39" N
510	-88.90718471	45.56221584	88 54' 25.86" W	45 33' 43.98" N
511	-88.90694143	45.52188860	88 54' 24.99" W	45 31' 18.80" N
512	-88.90692749	45.52260855	88 54' 24.94" W	45 31' 21.39" N
513	-88.90691354	45.52332851	88 54' 24.89" W	45 31' 23.98" N
514	-88.90689960	45.52404847	88 54' 24.84" W	45 31' 26.57" N
515	-88.90688565	45.52476842	88 54' 24.79" W	45 31' 29.17" N
516	-88.90687171	45.52548838	88 54' 24.74" W	45 31' 31.76" N
517	-88.90685776	45.52620834	88 54' 24.69" W	45 31' 34.35" N
518	-88.90684382	45.52692829	88 54' 24.64" W	45 31' 36.94" N
519	-88.90682987	45.52764825	88 54' 24.59" W	45 31' 39.53" N
520	-88.90681592	45.52836821	88 54' 24.54" W	45 31' 42.13" N
521	-88.90680197	45.52908816	88 54' 24.49" W	45 31' 44.72" N
522	-88.90678803	45.52980812	88 54' 24.44" W	45 31' 47.31" N
523	-88.90677408	45.53052807	88 54' 24.39" W	45 31' 49.90" N
524	-88.90676013	45.53124803	88 54' 24.34" W	45 31' 52.49" N
525	-88.90674618	45.53196798	88 54' 24.29" W	45 31' 55.08" N
526	-88.90673223	45.53268794	88 54' 24.24" W	45 31' 57.68" N
527	-88.90671827	45.53340790	88 54' 24.19" W	45 32' 0.27" N
528	-88.90670432	45.53412785	88 54' 24.14" W	45 32' 2.86" N
529	-88.90669037	45.53484781	88 54' 24.09" W	45 32' 5.45" N
530	-88.90667642	45.53556776	88 54' 24.04" W	45 32' 8.04" N
531	-88.90666246	45.53628772	88 54' 23.98" W	45 32' 10.64" N
532	-88.90664851	45.53700767	88 54' 23.93" W	45 32' 13.23" N
533	-88.90663456	45.53772763	88 54' 23.88" W	45 32' 15.82" N
534	-88.90662060	45.53844758	88 54' 23.83" W	45 32' 18.41" N
535	-88.90660665	45.53916754	88 54' 23.78" W	45 32' 21.00" N
536	-88.90659269	45.53988749	88 54' 23.73" W	45 32' 23.59" N
537	-88.90657873	45.54060744	88 54' 23.68" W	45 32' 26.19" N
538	-88.90656478	45.54132740	88 54' 23.63" W	45 32' 28.78" N
539	-88.90655082	45.54204735	88 54' 23.58" W	45 32' 31.37" N
540	-88.90653686	45.54276731	88 54' 23.53" W	45 32' 33.96" N
541	-88.90652290	45.54348726	88 54' 23.48" W	45 32' 36.55" N
542	-88.90650894	45.54420721	88 54' 23.43" W	45 32' 39.15" N
543	-88.90649498	45.54492717	88 54' 23.38" W	45 32' 41.74" N
544	-88.90648102	45.54564712	88 54' 23.33" W	45 32' 44.33" N
545	-88.90646706	45.54636708	88 54' 23.28" W	45 32' 46.92" N
546	-88.90645310	45.54708703	88 54' 23.23" W	45 32' 49.51" N
547	-88.90643914	45.54780698	88 54' 23.18" W	45 32' 52.11" N
548	-88.90642518	45.54852694	88 54' 23.13" W	45 32' 54.70" N
549	-88.90641121	45.54924689	88 54' 23.08" W	45 32' 57.29" N
550	-88.90639725	45.54996684	88 54' 23.03" W	45 32' 59.88" N

Sample Number	Longitude (Decimal Degrees)	Latitude (Decimal Degrees)	Longitude (DMS)	Longitude (DMS)
551	-88.90638329	45.55068680	88 54' 22.98" W	45 33' 2.47" N
552	-88.90636932	45.55140675	88 54' 22.93" W	45 33' 5.06" N
553	-88.90635536	45.55212670	88 54' 22.88" W	45 33' 7.66" N
554	-88.90634139	45.55284665	88 54' 22.83" W	45 33' 10.25" N
555	-88.90632743	45.55356661	88 54' 22.78" W	45 33' 12.84" N
556	-88.90631346	45.55428656	88 54' 22.73" W	45 33' 15.43" N
557	-88.90629949	45.55500651	88 54' 22.68" W	45 33' 18.02" N
558	-88.90628552	45.55572647	88 54' 22.63" W	45 33' 20.62" N
559	-88.90627156	45.55644642	88 54' 22.58" W	45 33' 23.21" N
560	-88.90625759	45.55716637	88 54' 22.53" W	45 33' 25.80" N
561	-88.90624362	45.55788632	88 54' 22.48" W	45 33' 28.39" N
562	-88.90622965	45.55860627	88 54' 22.43" W	45 33' 30.98" N
563	-88.90621568	45.55932623	88 54' 22.38" W	45 33' 33.57" N
564	-88.90620171	45.56004618	88 54' 22.33" W	45 33' 36.17" N
565	-88.90618774	45.56076613	88 54' 22.28" W	45 33' 38.76" N
566	-88.90617376	45.56148608	88 54' 22.23" W	45 33' 41.35" N
567	-88.90591724	45.52187879	88 54' 21.30" W	45 31' 18.76" N
568	-88.90590329	45.52259875	88 54' 21.25" W	45 31' 21.36" N
569	-88.90588933	45.52331871	88 54' 21.20" W	45 31' 23.95" N
570	-88.90587537	45.52403866	88 54' 21.15" W	45 31' 26.54" N
571	-88.90586142	45.52475862	88 54' 21.10" W	45 31' 29.13" N
572	-88.90584746	45.52547857	88 54' 21.05" W	45 31' 31.72" N
573	-88.90583350	45.52619853	88 54' 21.00" W	45 31' 34.31" N
574	-88.90581954	45.52691849	88 54' 20.95" W	45 31' 36.91" N
575	-88.90580558	45.52763844	88 54' 20.90" W	45 31' 39.50" N
576	-88.90579162	45.52835840	88 54' 20.85" W	45 31' 42.09" N
577	-88.90577766	45.52907835	88 54' 20.80" W	45 31' 44.68" N
578	-88.90576370	45.52979831	88 54' 20.75" W	45 31' 47.27" N
579	-88.90574973	45.53051826	88 54' 20.70" W	45 31' 49.87" N
580	-88.90573577	45.53123822	88 54' 20.65" W	45 31' 52.46" N
581	-88.90572181	45.53195818	88 54' 20.60" W	45 31' 55.05" N
582	-88.90570784	45.53267813	88 54' 20.55" W	45 31' 57.64" N
583	-88.90569388	45.53339809	88 54' 20.50" W	45 32' 0.23" N
584	-88.90567991	45.53411804	88 54' 20.45" W	45 32' 2.82" N
585	-88.90566595	45.53483800	88 54' 20.40" W	45 32' 5.42" N
586	-88.90565198	45.53555795	88 54' 20.35" W	45 32' 8.01" N
587	-88.90563802	45.53627791	88 54' 20.30" W	45 32' 10.60" N
588	-88.90562405	45.53699786	88 54' 20.25" W	45 32' 13.19" N
589	-88.90561008	45.53771781	88 54' 20.20" W	45 32' 15.78" N
590	-88.90559611	45.53843777	88 54' 20.15" W	45 32' 18.38" N
591	-88.90558215	45.53915772	88 54' 20.10" W	45 32' 20.97" N
592	-88.90556818	45.53987768	88 54' 20.05" W	45 32' 23.56" N
593	-88.90555421	45.54059763	88 54' 20.00" W	45 32' 26.15" N
594	-88.90554024	45.54131759	88 54' 19.94" W	45 32' 28.74" N
595	-88.90552627	45.54203754	88 54' 19.89" W	45 32' 31.34" N
596	-88.90551230	45.54275749	88 54' 19.84" W	45 32' 33.93" N
597	-88.90549832	45.54347745	88 54' 19.79" W	45 32' 36.52" N
598	-88.90548435	45.54419740	88 54' 19.74" W	45 32' 39.11" N
599	-88.90547038	45.54491735	88 54' 19.69" W	45 32' 41.70" N
600	-88.90545641	45.54563731	88 54' 19.64" W	45 32' 44.29" N

Sample Number	Longitude (Decimal Degrees)	Latitude (Decimal Degrees)	Longitude (DMS)	Longitude (DMS)
601	-88.90544243	45.54635726	88 54' 19.59" W	45 32' 46.89" N
602	-88.90542846	45.54707722	88 54' 19.54" W	45 32' 49.48" N
603	-88.90541448	45.54779717	88 54' 19.49" W	45 32' 52.07" N
604	-88.90540051	45.54851712	88 54' 19.44" W	45 32' 54.66" N
605	-88.90538653	45.54923707	88 54' 19.39" W	45 32' 57.25" N
606	-88.90537255	45.54995703	88 54' 19.34" W	45 32' 59.85" N
607	-88.90535858	45.55067698	88 54' 19.29" W	45 33' 2.44" N
608	-88.90534460	45.55139693	88 54' 19.24" W	45 33' 5.03" N
609	-88.90533062	45.55211689	88 54' 19.19" W	45 33' 7.62" N
610	-88.90531664	45.55283684	88 54' 19.14" W	45 33' 10.21" N
611	-88.90530266	45.55355679	88 54' 19.09" W	45 33' 12.80" N
612	-88.90528868	45.55427674	88 54' 19.04" W	45 33' 15.40" N
613	-88.90527470	45.55499670	88 54' 18.99" W	45 33' 17.99" N
614	-88.90526072	45.55571665	88 54' 18.94" W	45 33' 20.58" N
615	-88.90524674	45.55643660	88 54' 18.89" W	45 33' 23.17" N
616	-88.90523276	45.55715655	88 54' 18.84" W	45 33' 25.76" N
617	-88.90521878	45.55787650	88 54' 18.79" W	45 33' 28.36" N
618	-88.90520480	45.55859646	88 54' 18.74" W	45 33' 30.95" N
619	-88.90519081	45.55931641	88 54' 18.69" W	45 33' 33.54" N
620	-88.90517683	45.56003636	88 54' 18.64" W	45 33' 36.13" N
621	-88.90516284	45.56075631	88 54' 18.59" W	45 33' 38.72" N
622	-88.90489306	45.52186898	88 54' 17.62" W	45 31' 18.73" N
623	-88.90487909	45.52258893	88 54' 17.56" W	45 31' 21.32" N
624	-88.90486512	45.52330889	88 54' 17.51" W	45 31' 23.91" N
625	-88.90485115	45.52402885	88 54' 17.46" W	45 31' 26.50" N
626	-88.90483718	45.52474880	88 54' 17.41" W	45 31' 29.10" N
627	-88.90482321	45.52546876	88 54' 17.36" W	45 31' 31.69" N
628	-88.90480923	45.52618871	88 54' 17.31" W	45 31' 34.28" N
629	-88.90479526	45.52690867	88 54' 17.26" W	45 31' 36.87" N
630	-88.90478129	45.52762862	88 54' 17.21" W	45 31' 39.46" N
631	-88.90476732	45.52834858	88 54' 17.16" W	45 31' 42.05" N
632	-88.90475334	45.52906854	88 54' 17.11" W	45 31' 44.65" N
633	-88.90473937	45.52978849	88 54' 17.06" W	45 31' 47.24" N
634	-88.90472539	45.53050845	88 54' 17.01" W	45 31' 49.83" N
635	-88.90471142	45.53122840	88 54' 16.96" W	45 31' 52.42" N
636	-88.90469744	45.53194836	88 54' 16.91" W	45 31' 55.01" N
637	-88.90468346	45.53266831	88 54' 16.86" W	45 31' 57.61" N
638	-88.90466948	45.53338827	88 54' 16.81" W	45 32' 0.20" N
639	-88.90465551	45.53410822	88 54' 16.76" W	45 32' 2.79" N
640	-88.90464153	45.53482818	88 54' 16.71" W	45 32' 5.38" N
641	-88.90462755	45.53554813	88 54' 16.66" W	45 32' 7.97" N
642	-88.90461357	45.53626809	88 54' 16.61" W	45 32' 10.57" N
643	-88.90459959	45.53698804	88 54' 16.56" W	45 32' 13.16" N
644	-88.90458561	45.53770799	88 54' 16.51" W	45 32' 15.75" N
645	-88.90457163	45.53842795	88 54' 16.46" W	45 32' 18.34" N
646	-88.90455765	45.53914790	88 54' 16.41" W	45 32' 20.93" N
647	-88.90454366	45.53986786	88 54' 16.36" W	45 32' 23.52" N
648	-88.90452968	45.54058781	88 54' 16.31" W	45 32' 26.12" N
649	-88.90451570	45.54130776	88 54' 16.26" W	45 32' 28.71" N
650	-88.90450171	45.54202772	88 54' 16.21" W	45 32' 31.30" N

Sample Number	Longitude (Decimal Degrees)	Latitude (Decimal Degrees)	Longitude (DMS)	Longitude (DMS)
651	-88.90448773	45.54274767	88 54' 16.16" W	45 32' 33.89" N
652	-88.90447375	45.54346762	88 54' 16.11" W	45 32' 36.48" N
653	-88.90445976	45.54418758	88 54' 16.06" W	45 32' 39.08" N
654	-88.90444577	45.54490753	88 54' 16.00" W	45 32' 41.67" N
655	-88.90443179	45.54562749	88 54' 15.95" W	45 32' 44.26" N
656	-88.90441780	45.54634744	88 54' 15.90" W	45 32' 46.85" N
657	-88.90440381	45.54706739	88 54' 15.85" W	45 32' 49.44" N
658	-88.90438983	45.54778734	88 54' 15.80" W	45 32' 52.03" N
659	-88.90437584	45.54850730	88 54' 15.75" W	45 32' 54.63" N
660	-88.90436185	45.54922725	88 54' 15.70" W	45 32' 57.22" N
661	-88.90434786	45.54994720	88 54' 15.65" W	45 32' 59.81" N
662	-88.90433387	45.55066716	88 54' 15.60" W	45 33' 2.40" N
663	-88.90431988	45.55138711	88 54' 15.55" W	45 33' 4.99" N
664	-88.90430589	45.55210706	88 54' 15.50" W	45 33' 7.59" N
665	-88.90429190	45.55282701	88 54' 15.45" W	45 33' 10.18" N
666	-88.90427790	45.55354696	88 54' 15.40" W	45 33' 12.77" N
667	-88.90426391	45.55426692	88 54' 15.35" W	45 33' 15.36" N
668	-88.90424992	45.55498687	88 54' 15.30" W	45 33' 17.95" N
669	-88.90423592	45.55570682	88 54' 15.25" W	45 33' 20.54" N
670	-88.90422193	45.55642677	88 54' 15.20" W	45 33' 23.14" N
671	-88.90420793	45.55714672	88 54' 15.15" W	45 33' 25.73" N
672	-88.90419394	45.55786668	88 54' 15.10" W	45 33' 28.32" N
673	-88.90417994	45.55858663	88 54' 15.05" W	45 33' 30.91" N
674	-88.90416595	45.55930658	88 54' 15.00" W	45 33' 33.50" N
675	-88.90415195	45.56002653	88 54' 14.95" W	45 33' 36.10" N
676	-88.90413795	45.56074648	88 54' 14.90" W	45 33' 38.69" N
677	-88.90386887	45.52185915	88 54' 13.93" W	45 31' 18.69" N
678	-88.90385489	45.52257911	88 54' 13.88" W	45 31' 21.28" N
679	-88.90384091	45.52329906	88 54' 13.83" W	45 31' 23.88" N
680	-88.90382692	45.52401902	88 54' 13.78" W	45 31' 26.47" N
681	-88.90381294	45.52473898	88 54' 13.73" W	45 31' 29.06" N
682	-88.90379896	45.52545893	88 54' 13.68" W	45 31' 31.65" N
683	-88.90378497	45.52617889	88 54' 13.63" W	45 31' 34.24" N
684	-88.90377099	45.52689884	88 54' 13.58" W	45 31' 36.84" N
685	-88.90375700	45.52761880	88 54' 13.53" W	45 31' 39.43" N
686	-88.90374301	45.52833875	88 54' 13.47" W	45 31' 42.02" N
687	-88.90372902	45.52905871	88 54' 13.42" W	45 31' 44.61" N
688	-88.90371504	45.52977866	88 54' 13.37" W	45 31' 47.20" N
689	-88.90370105	45.53049862	88 54' 13.32" W	45 31' 49.80" N
690	-88.90368706	45.53121857	88 54' 13.27" W	45 31' 52.39" N
691	-88.90367307	45.53193853	88 54' 13.22" W	45 31' 54.98" N
692	-88.90365908	45.53265848	88 54' 13.17" W	45 31' 57.57" N
693	-88.90364509	45.53337844	88 54' 13.12" W	45 32' 0.16" N
694	-88.90363110	45.53409839	88 54' 13.07" W	45 32' 2.75" N
695	-88.90361711	45.53481835	88 54' 13.02" W	45 32' 5.35" N
696	-88.90360312	45.53553830	88 54' 12.97" W	45 32' 7.94" N
697	-88.90358912	45.53625826	88 54' 12.92" W	45 32' 10.53" N
698	-88.90357513	45.53697821	88 54' 12.87" W	45 32' 13.12" N
699	-88.90356114	45.53769816	88 54' 12.82" W	45 32' 15.71" N
700	-88.90354714	45.53841812	88 54' 12.77" W	45 32' 18.31" N

Sample Number	Longitude (Decimal Degrees)	Latitude (Decimal Degrees)	Longitude (DMS)	Longitude (DMS)
701	-88.90353315	45.53913807	88 54' 12.72" W	45 32' 20.90" N
702	-88.90351915	45.53985803	88 54' 12.67" W	45 32' 23.49" N
703	-88.90350516	45.54057798	88 54' 12.62" W	45 32' 26.08" N
704	-88.90349116	45.54129793	88 54' 12.57" W	45 32' 28.67" N
705	-88.90347716	45.54201789	88 54' 12.52" W	45 32' 31.26" N
706	-88.90346317	45.54273784	88 54' 12.47" W	45 32' 33.86" N
707	-88.90344917	45.54345779	88 54' 12.42" W	45 32' 36.45" N
708	-88.90343517	45.54417775	88 54' 12.37" W	45 32' 39.04" N
709	-88.90342117	45.54489770	88 54' 12.32" W	45 32' 41.63" N
710	-88.90340717	45.54561765	88 54' 12.27" W	45 32' 44.22" N
711	-88.90339317	45.54633761	88 54' 12.22" W	45 32' 46.82" N
712	-88.90337917	45.54705756	88 54' 12.17" W	45 32' 49.41" N
713	-88.90336517	45.54777751	88 54' 12.11" W	45 32' 52.00" N
714	-88.90335117	45.54849746	88 54' 12.06" W	45 32' 54.59" N
715	-88.90333717	45.54921742	88 54' 12.01" W	45 32' 57.18" N
716	-88.90332316	45.54993737	88 54' 11.96" W	45 32' 59.77" N
717	-88.90330916	45.55065732	88 54' 11.91" W	45 33' 2.37" N
718	-88.90329516	45.55137727	88 54' 11.86" W	45 33' 4.96" N
719	-88.90328115	45.55209723	88 54' 11.81" W	45 33' 7.55" N
720	-88.90326715	45.55281718	88 54' 11.76" W	45 33' 10.14" N
721	-88.90325314	45.55353713	88 54' 11.71" W	45 33' 12.73" N
722	-88.90323914	45.55425708	88 54' 11.66" W	45 33' 15.33" N
723	-88.90322513	45.55497703	88 54' 11.61" W	45 33' 17.92" N
724	-88.90321112	45.55569699	88 54' 11.56" W	45 33' 20.51" N
725	-88.90319712	45.55641694	88 54' 11.51" W	45 33' 23.10" N
726	-88.90318311	45.55713689	88 54' 11.46" W	45 33' 25.69" N
727	-88.90316910	45.55785684	88 54' 11.41" W	45 33' 28.28" N
728	-88.90315509	45.55857679	88 54' 11.36" W	45 33' 30.88" N
729	-88.90314108	45.55929674	88 54' 11.31" W	45 33' 33.47" N
730	-88.90312707	45.56001669	88 54' 11.26" W	45 33' 36.06" N
731	-88.90284469	45.52184932	88 54' 10.24" W	45 31' 18.66" N
732	-88.90283069	45.52256928	88 54' 10.19" W	45 31' 21.25" N
733	-88.90281670	45.52328923	88 54' 10.14" W	45 31' 23.84" N
734	-88.90280270	45.52400919	88 54' 10.09" W	45 31' 26.43" N
735	-88.90278870	45.52472914	88 54' 10.04" W	45 31' 29.02" N
736	-88.90277471	45.52544910	88 54' 9.99" W	45 31' 31.62" N
737	-88.90276071	45.52616905	88 54' 9.94" W	45 31' 34.21" N
738	-88.90274671	45.52688901	88 54' 9.89" W	45 31' 36.80" N
739	-88.90273271	45.52760896	88 54' 9.84" W	45 31' 39.39" N
740	-88.90271871	45.52832892	88 54' 9.79" W	45 31' 41.98" N
741	-88.90270471	45.52904887	88 54' 9.74" W	45 31' 44.58" N
742	-88.90269071	45.52976883	88 54' 9.69" W	45 31' 47.17" N
743	-88.90267671	45.53048878	88 54' 9.64" W	45 31' 49.76" N
744	-88.90266271	45.53120874	88 54' 9.59" W	45 31' 52.35" N
745	-88.90264870	45.53192869	88 54' 9.54" W	45 31' 54.94" N
746	-88.90263470	45.53264865	88 54' 9.48" W	45 31' 57.54" N
747	-88.90262070	45.53336860	88 54' 9.43" W	45 32' 0.13" N
748	-88.90260669	45.53408856	88 54' 9.38" W	45 32' 2.72" N
749	-88.90259269	45.53480851	88 54' 9.33" W	45 32' 5.31" N
750	-88.90257868	45.53552846	88 54' 9.28" W	45 32' 7.90" N

Sample Number	Longitude (Decimal Degrees)	Latitude (Decimal Degrees)	Longitude (DMS)	Longitude (DMS)
751	-88.90256468	45.53624842	88 54' 9.23" W	45 32' 10.49" N
752	-88.90255067	45.53696837	88 54' 9.18" W	45 32' 13.09" N
753	-88.90253666	45.53768833	88 54' 9.13" W	45 32' 15.68" N
754	-88.90252266	45.53840828	88 54' 9.08" W	45 32' 18.27" N
755	-88.90250865	45.53912823	88 54' 9.03" W	45 32' 20.86" N
756	-88.90249464	45.53984819	88 54' 8.98" W	45 32' 23.45" N
757	-88.90248063	45.54056814	88 54' 8.93" W	45 32' 26.05" N
758	-88.90246662	45.54128809	88 54' 8.88" W	45 32' 28.64" N
759	-88.90245261	45.54200805	88 54' 8.83" W	45 32' 31.23" N
760	-88.90243860	45.54272800	88 54' 8.78" W	45 32' 33.82" N
761	-88.90242459	45.54344795	88 54' 8.73" W	45 32' 36.41" N
762	-88.90241058	45.54416791	88 54' 8.68" W	45 32' 39.00" N
763	-88.90239657	45.54488786	88 54' 8.63" W	45 32' 41.60" N
764	-88.90238256	45.54560781	88 54' 8.58" W	45 32' 44.19" N
765	-88.90236854	45.54632776	88 54' 8.53" W	45 32' 46.78" N
766	-88.90235453	45.54704772	88 54' 8.48" W	45 32' 49.37" N
767	-88.90234052	45.54776767	88 54' 8.43" W	45 32' 51.96" N
768	-88.90232650	45.54848762	88 54' 8.38" W	45 32' 54.56" N
769	-88.90231249	45.54920757	88 54' 8.32" W	45 32' 57.15" N
770	-88.90229847	45.54992753	88 54' 8.27" W	45 32' 59.74" N
771	-88.90228445	45.55064748	88 54' 8.22" W	45 33' 2.33" N
772	-88.90227044	45.55136743	88 54' 8.17" W	45 33' 4.92" N
773	-88.90225642	45.55208738	88 54' 8.12" W	45 33' 7.51" N
774	-88.90224240	45.55280733	88 54' 8.07" W	45 33' 10.11" N
775	-88.90222838	45.55352729	88 54' 8.02" W	45 33' 12.70" N
776	-88.90221436	45.55424724	88 54' 7.97" W	45 33' 15.29" N
777	-88.90220034	45.55496719	88 54' 7.92" W	45 33' 17.88" N
778	-88.90218632	45.55568714	88 54' 7.87" W	45 33' 20.47" N
779	-88.90217230	45.55640709	88 54' 7.82" W	45 33' 23.07" N
780	-88.90215828	45.55712704	88 54' 7.77" W	45 33' 25.66" N
781	-88.90214426	45.55784699	88 54' 7.72" W	45 33' 28.25" N
782	-88.90213024	45.55856695	88 54' 7.67" W	45 33' 30.84" N
783	-88.90211622	45.55928690	88 54' 7.62" W	45 33' 33.43" N
784	-88.90210219	45.56000685	88 54' 7.57" W	45 33' 36.02" N
785	-88.90180650	45.52255943	88 54' 6.50" W	45 31' 21.21" N
786	-88.90179249	45.52327939	88 54' 6.45" W	45 31' 23.81" N
787	-88.90177848	45.52399934	88 54' 6.40" W	45 31' 26.40" N
788	-88.90176447	45.52471930	88 54' 6.35" W	45 31' 28.99" N
789	-88.90175046	45.52543925	88 54' 6.30" W	45 31' 31.58" N
790	-88.90173644	45.52615921	88 54' 6.25" W	45 31' 34.17" N
791	-88.90172243	45.52687916	88 54' 6.20" W	45 31' 36.76" N
792	-88.90170842	45.52759912	88 54' 6.15" W	45 31' 39.36" N
793	-88.90169441	45.52831907	88 54' 6.10" W	45 31' 41.95" N
794	-88.90168039	45.52903903	88 54' 6.05" W	45 31' 44.54" N
795	-88.90166638	45.52975898	88 54' 6.00" W	45 31' 47.13" N
796	-88.90165237	45.53047894	88 54' 5.95" W	45 31' 49.72" N
797	-88.90163835	45.53119889	88 54' 5.90" W	45 31' 52.32" N
798	-88.90162434	45.53191885	88 54' 5.85" W	45 31' 54.91" N
799	-88.90161032	45.53263880	88 54' 5.80" W	45 31' 57.50" N
800	-88.90159630	45.53335875	88 54' 5.75" W	45 32' 0.09" N

Sample Number	Longitude (Decimal Degrees)	Latitude (Decimal Degrees)	Longitude (DMS)	Longitude (DMS)
801	-88.90158229	45.53407871	88 54' 5.70" W	45 32' 2.68" N
802	-88.90156827	45.53479866	88 54' 5.65" W	45 32' 5.28" N
803	-88.90155425	45.53551862	88 54' 5.60" W	45 32' 7.87" N
804	-88.90154023	45.53623857	88 54' 5.54" W	45 32' 10.46" N
805	-88.90152621	45.53695852	88 54' 5.49" W	45 32' 13.05" N
806	-88.90151219	45.53767848	88 54' 5.44" W	45 32' 15.64" N
807	-88.90149817	45.53839843	88 54' 5.39" W	45 32' 18.23" N
808	-88.90148415	45.53911838	88 54' 5.34" W	45 32' 20.83" N
809	-88.90147013	45.53983834	88 54' 5.29" W	45 32' 23.42" N
810	-88.90145611	45.54055829	88 54' 5.24" W	45 32' 26.01" N
811	-88.90144209	45.54127824	88 54' 5.19" W	45 32' 28.60" N
812	-88.90142806	45.54199820	88 54' 5.14" W	45 32' 31.19" N
813	-88.90141404	45.54271815	88 54' 5.09" W	45 32' 33.79" N
814	-88.90140002	45.54343810	88 54' 5.04" W	45 32' 36.38" N
815	-88.90138599	45.54415806	88 54' 4.99" W	45 32' 38.97" N
816	-88.90137197	45.54487801	88 54' 4.94" W	45 32' 41.56" N
817	-88.90135794	45.54559796	88 54' 4.89" W	45 32' 44.15" N
818	-88.90134391	45.54631791	88 54' 4.84" W	45 32' 46.74" N
819	-88.90132989	45.54703787	88 54' 4.79" W	45 32' 49.34" N
820	-88.90131586	45.54775782	88 54' 4.74" W	45 32' 51.93" N
821	-88.90130183	45.54847777	88 54' 4.69" W	45 32' 54.52" N
822	-88.90128780	45.54919772	88 54' 4.64" W	45 32' 57.11" N
823	-88.90127378	45.54991767	88 54' 4.59" W	45 32' 59.70" N
824	-88.90125975	45.55063763	88 54' 4.54" W	45 33' 2.30" N
825	-88.90124572	45.55135758	88 54' 4.48" W	45 33' 4.89" N
826	-88.90123169	45.55207753	88 54' 4.43" W	45 33' 7.48" N
827	-88.90121766	45.55279748	88 54' 4.38" W	45 33' 10.07" N
828	-88.90120362	45.55351743	88 54' 4.33" W	45 33' 12.66" N
829	-88.90118959	45.55423738	88 54' 4.28" W	45 33' 15.25" N
830	-88.90117556	45.55495733	88 54' 4.23" W	45 33' 17.85" N
831	-88.90116153	45.55567729	88 54' 4.18" W	45 33' 20.44" N
832	-88.90114749	45.55639724	88 54' 4.13" W	45 33' 23.03" N
833	-88.90113346	45.55711719	88 54' 4.08" W	45 33' 25.62" N
834	-88.90111942	45.55783714	88 54' 4.03" W	45 33' 28.21" N
835	-88.90110539	45.55855709	88 54' 3.98" W	45 33' 30.81" N
836	-88.90109135	45.55927704	88 54' 3.93" W	45 33' 33.40" N
837	-88.90107732	45.55999699	88 54' 3.88" W	45 33' 35.99" N
838	-88.90078230	45.52254958	88 54' 2.82" W	45 31' 21.18" N
839	-88.90076828	45.52326954	88 54' 2.77" W	45 31' 23.77" N
840	-88.90075425	45.52398949	88 54' 2.72" W	45 31' 26.36" N
841	-88.90074023	45.52470945	88 54' 2.66" W	45 31' 28.95" N
842	-88.90072621	45.52542940	88 54' 2.61" W	45 31' 31.55" N
843	-88.90071218	45.52614936	88 54' 2.56" W	45 31' 34.14" N
844	-88.90069816	45.52686931	88 54' 2.51" W	45 31' 36.73" N
845	-88.90068413	45.52758926	88 54' 2.46" W	45 31' 39.32" N
846	-88.90067011	45.52830922	88 54' 2.41" W	45 31' 41.91" N
847	-88.90065608	45.52902917	88 54' 2.36" W	45 31' 44.51" N
848	-88.90064205	45.52974913	88 54' 2.31" W	45 31' 47.10" N
849	-88.90062803	45.53046908	88 54' 2.26" W	45 31' 49.69" N
850	-88.90061400	45.53118904	88 54' 2.21" W	45 31' 52.28" N

Sample Number	Longitude (Decimal Degrees)	Latitude (Decimal Degrees)	Longitude (DMS)	Longitude (DMS)
851	-88.90059997	45.53190899	88 54' 2.16" W	45 31' 54.87" N
852	-88.90058594	45.53262894	88 54' 2.11" W	45 31' 57.46" N
853	-88.90057191	45.53334890	88 54' 2.06" W	45 32' 0.06" N
854	-88.90055788	45.53406885	88 54' 2.01" W	45 32' 2.65" N
855	-88.90054385	45.53478881	88 54' 1.96" W	45 32' 5.24" N
856	-88.90052982	45.53550876	88 54' 1.91" W	45 32' 7.83" N
857	-88.90051579	45.53622871	88 54' 1.86" W	45 32' 10.42" N
858	-88.90050175	45.53694867	88 54' 1.81" W	45 32' 13.02" N
859	-88.90048772	45.53766862	88 54' 1.76" W	45 32' 15.61" N
860	-88.90047369	45.53838857	88 54' 1.71" W	45 32' 18.20" N
861	-88.90045965	45.53910853	88 54' 1.65" W	45 32' 20.79" N
862	-88.90044562	45.53982848	88 54' 1.60" W	45 32' 23.38" N
863	-88.90043158	45.54054843	88 54' 1.55" W	45 32' 25.97" N
864	-88.90041755	45.54126839	88 54' 1.50" W	45 32' 28.57" N
865	-88.90040351	45.54198834	88 54' 1.45" W	45 32' 31.16" N
866	-88.90038948	45.54270829	88 54' 1.40" W	45 32' 33.75" N
867	-88.90037544	45.54342824	88 54' 1.35" W	45 32' 36.34" N
868	-88.90036140	45.54414820	88 54' 1.30" W	45 32' 38.93" N
869	-88.90034736	45.54486815	88 54' 1.25" W	45 32' 41.53" N
870	-88.90033333	45.54558810	88 54' 1.20" W	45 32' 44.12" N
871	-88.90031929	45.54630805	88 54' 1.15" W	45 32' 46.71" N
872	-88.90030525	45.54702800	88 54' 1.10" W	45 32' 49.30" N
873	-88.90029121	45.54774796	88 54' 1.05" W	45 32' 51.89" N
874	-88.90027717	45.54846791	88 54' 1.00" W	45 32' 54.48" N
875	-88.90026312	45.54918786	88 54' 0.95" W	45 32' 57.08" N
876	-88.90024908	45.54990781	88 54' 0.90" W	45 32' 59.67" N
877	-88.90023504	45.55062776	88 54' 0.85" W	45 33' 2.26" N
878	-88.90022100	45.55134772	88 54' 0.80" W	45 33' 4.85" N
879	-88.90020695	45.55206767	88 54' 0.75" W	45 33' 7.44" N
880	-88.90019291	45.55278762	88 54' 0.69" W	45 33' 10.04" N
881	-88.90017886	45.55350757	88 54' 0.64" W	45 33' 12.63" N
882	-88.90016482	45.55422752	88 54' 0.59" W	45 33' 15.22" N
883	-88.90015077	45.55494747	88 54' 0.54" W	45 33' 17.81" N
884	-88.90013673	45.55566742	88 54' 0.49" W	45 33' 20.40" N
885	-88.90012268	45.55638737	88 54' 0.44" W	45 33' 22.99" N
886	-88.90010863	45.55710732	88 54' 0.39" W	45 33' 25.59" N
887	-88.90009459	45.55782727	88 54' 0.34" W	45 33' 28.18" N
888	-88.90008054	45.55854723	88 54' 0.29" W	45 33' 30.77" N
889	-88.90006649	45.55926718	88 54' 0.24" W	45 33' 33.36" N
890	-88.89975810	45.52253972	88 53' 59.13" W	45 31' 21.14" N
891	-88.89974407	45.52325967	88 53' 59.08" W	45 31' 23.73" N
892	-88.89973003	45.52397963	88 53' 59.03" W	45 31' 26.33" N
893	-88.89971600	45.52469958	88 53' 58.98" W	45 31' 28.92" N
894	-88.89970196	45.52541954	88 53' 58.93" W	45 31' 31.51" N
895	-88.89968792	45.52613949	88 53' 58.88" W	45 31' 34.10" N
896	-88.89967388	45.52685945	88 53' 58.83" W	45 31' 36.69" N
897	-88.89965984	45.52757940	88 53' 58.78" W	45 31' 39.29" N
898	-88.89964581	45.52829936	88 53' 58.72" W	45 31' 41.88" N
899	-88.89963177	45.52901931	88 53' 58.67" W	45 31' 44.47" N
900	-88.89961773	45.52973926	88 53' 58.62" W	45 31' 47.06" N

Sample Number	Longitude (Decimal Degrees)	Latitude (Decimal Degrees)	Longitude (DMS)	Longitude (DMS)
901	-88.89960369	45.53045922	88 53' 58.57" W	45 31' 49.65" N
902	-88.89958964	45.53117917	88 53' 58.52" W	45 31' 52.25" N
903	-88.89957560	45.53189913	88 53' 58.47" W	45 31' 54.84" N
904	-88.89956156	45.53261908	88 53' 58.42" W	45 31' 57.43" N
905	-88.89954752	45.53333903	88 53' 58.37" W	45 32' 0.02" N
906	-88.89953347	45.53405899	88 53' 58.32" W	45 32' 2.61" N
907	-88.89951943	45.53477894	88 53' 58.27" W	45 32' 5.20" N
908	-88.89950539	45.53549889	88 53' 58.22" W	45 32' 7.80" N
909	-88.89949134	45.53621885	88 53' 58.17" W	45 32' 10.39" N
910	-88.89947730	45.53693880	88 53' 58.12" W	45 32' 12.98" N
911	-88.89946325	45.53765875	88 53' 58.07" W	45 32' 15.57" N
912	-88.89944920	45.53837871	88 53' 58.02" W	45 32' 18.16" N
913	-88.89943516	45.53909866	88 53' 57.97" W	45 32' 20.76" N
914	-88.89942111	45.53981861	88 53' 57.92" W	45 32' 23.35" N
915	-88.89940706	45.54053856	88 53' 57.87" W	45 32' 25.94" N
916	-88.89939301	45.54125852	88 53' 57.81" W	45 32' 28.53" N
917	-88.89937896	45.54197847	88 53' 57.76" W	45 32' 31.12" N
918	-88.89936491	45.54269842	88 53' 57.71" W	45 32' 33.71" N
919	-88.89935086	45.54341837	88 53' 57.66" W	45 32' 36.31" N
920	-88.89933681	45.54413833	88 53' 57.61" W	45 32' 38.90" N
921	-88.89932276	45.54485828	88 53' 57.56" W	45 32' 41.49" N
922	-88.89930871	45.54557823	88 53' 57.51" W	45 32' 44.08" N
923	-88.89929466	45.54629818	88 53' 57.46" W	45 32' 46.67" N
924	-88.89928061	45.54701814	88 53' 57.41" W	45 32' 49.27" N
925	-88.89926655	45.54773809	88 53' 57.36" W	45 32' 51.86" N
926	-88.89925250	45.54845804	88 53' 57.31" W	45 32' 54.45" N
927	-88.89923844	45.54917799	88 53' 57.26" W	45 32' 57.04" N
928	-88.89922439	45.54989794	88 53' 57.21" W	45 32' 59.63" N
929	-88.89921033	45.55061789	88 53' 57.16" W	45 33' 2.22" N
930	-88.89919628	45.55133784	88 53' 57.11" W	45 33' 4.82" N
931	-88.89918222	45.55205780	88 53' 57.06" W	45 33' 7.41" N
932	-88.89916816	45.55277775	88 53' 57.01" W	45 33' 10.00" N
933	-88.89915411	45.55349770	88 53' 56.95" W	45 33' 12.59" N
934	-88.89914005	45.55421765	88 53' 56.90" W	45 33' 15.18" N
935	-88.89912599	45.55493760	88 53' 56.85" W	45 33' 17.78" N
936	-88.89911193	45.55565755	88 53' 56.80" W	45 33' 20.37" N
937	-88.89909787	45.55637750	88 53' 56.75" W	45 33' 22.96" N
938	-88.89908381	45.55709745	88 53' 56.70" W	45 33' 25.55" N
939	-88.89906975	45.55781740	88 53' 56.65" W	45 33' 28.14" N
940	-88.89905569	45.55853735	88 53' 56.60" W	45 33' 30.73" N
941	-88.89904163	45.55925730	88 53' 56.55" W	45 33' 33.33" N
942	-88.89873391	45.52252985	88 53' 55.44" W	45 31' 21.11" N
943	-88.89871986	45.52324980	88 53' 55.39" W	45 31' 23.70" N
944	-88.89870581	45.52396976	88 53' 55.34" W	45 31' 26.29" N
945	-88.89869176	45.52468971	88 53' 55.29" W	45 31' 28.88" N
946	-88.89867771	45.52540967	88 53' 55.24" W	45 31' 31.47" N
947	-88.89866366	45.52612962	88 53' 55.19" W	45 31' 34.07" N
948	-88.89864961	45.52684958	88 53' 55.14" W	45 31' 36.66" N
949	-88.89863556	45.52756953	88 53' 55.09" W	45 31' 39.25" N
950	-88.89862151	45.52828948	88 53' 55.04" W	45 31' 41.84" N

Sample Number	Longitude (Decimal Degrees)	Latitude (Decimal Degrees)	Longitude (DMS)	Longitude (DMS)
951	-88.89860745	45.52900944	88 53' 54.99" W	45 31' 44.43" N
952	-88.89859340	45.52972939	88 53' 54.94" W	45 31' 47.03" N
953	-88.89857935	45.53044935	88 53' 54.89" W	45 31' 49.62" N
954	-88.89856529	45.53116930	88 53' 54.84" W	45 31' 52.21" N
955	-88.89855124	45.53188925	88 53' 54.78" W	45 31' 54.80" N
956	-88.89853718	45.53260921	88 53' 54.73" W	45 31' 57.39" N
957	-88.89852313	45.53332916	88 53' 54.68" W	45 31' 59.98" N
958	-88.89850907	45.53404911	88 53' 54.63" W	45 32' 2.58" N
959	-88.89849501	45.53476907	88 53' 54.58" W	45 32' 5.17" N
960	-88.89848096	45.53548902	88 53' 54.53" W	45 32' 7.76" N
961	-88.89846690	45.53620897	88 53' 54.48" W	45 32' 10.35" N
962	-88.89845284	45.53692893	88 53' 54.43" W	45 32' 12.94" N
963	-88.89843878	45.53764888	88 53' 54.38" W	45 32' 15.54" N
964	-88.89842472	45.53836883	88 53' 54.33" W	45 32' 18.13" N
965	-88.89841066	45.53908878	88 53' 54.28" W	45 32' 20.72" N
966	-88.89839660	45.53980874	88 53' 54.23" W	45 32' 23.31" N
967	-88.89838254	45.54052869	88 53' 54.18" W	45 32' 25.90" N
968	-88.89836848	45.54124864	88 53' 54.13" W	45 32' 28.50" N
969	-88.89835442	45.54196859	88 53' 54.08" W	45 32' 31.09" N
970	-88.89834035	45.54268855	88 53' 54.03" W	45 32' 33.68" N
971	-88.89832629	45.54340850	88 53' 53.97" W	45 32' 36.27" N
972	-88.89831223	45.54412845	88 53' 53.92" W	45 32' 38.86" N
973	-88.89829816	45.54484840	88 53' 53.87" W	45 32' 41.45" N
974	-88.89828410	45.54556835	88 53' 53.82" W	45 32' 44.05" N
975	-88.89827003	45.54628830	88 53' 53.77" W	45 32' 46.64" N
976	-88.89825597	45.54700826	88 53' 53.72" W	45 32' 49.23" N
977	-88.89824190	45.54772821	88 53' 53.67" W	45 32' 51.82" N
978	-88.89822783	45.54844816	88 53' 53.62" W	45 32' 54.41" N
979	-88.89821376	45.54916811	88 53' 53.57" W	45 32' 57.01" N
980	-88.89819970	45.54988806	88 53' 53.52" W	45 32' 59.60" N
981	-88.89818563	45.55060801	88 53' 53.47" W	45 33' 2.19" N
982	-88.89817156	45.55132796	88 53' 53.42" W	45 33' 4.78" N
983	-88.89815749	45.55204791	88 53' 53.37" W	45 33' 7.37" N
984	-88.89814342	45.55276787	88 53' 53.32" W	45 33' 9.96" N
985	-88.89812935	45.55348782	88 53' 53.27" W	45 33' 12.56" N
986	-88.89811528	45.55420777	88 53' 53.22" W	45 33' 15.15" N
987	-88.89810121	45.55492772	88 53' 53.16" W	45 33' 17.74" N
988	-88.89808713	45.55564767	88 53' 53.11" W	45 33' 20.33" N
989	-88.89807306	45.55636762	88 53' 53.06" W	45 33' 22.92" N
990	-88.89805899	45.55708757	88 53' 53.01" W	45 33' 25.52" N
991	-88.89804491	45.55780752	88 53' 52.96" W	45 33' 28.11" N
992	-88.89803084	45.55852747	88 53' 52.91" W	45 33' 30.70" N
993	-88.89769565	45.52323992	88 53' 51.70" W	45 31' 23.66" N
994	-88.89768159	45.52395988	88 53' 51.65" W	45 31' 26.26" N
995	-88.89766753	45.52467983	88 53' 51.60" W	45 31' 28.85" N
996	-88.89765346	45.52539979	88 53' 51.55" W	45 31' 31.44" N
997	-88.89763940	45.52611974	88 53' 51.50" W	45 31' 34.03" N
998	-88.89762534	45.52683969	88 53' 51.45" W	45 31' 36.62" N
999	-88.89761127	45.52755965	88 53' 51.40" W	45 31' 39.21" N
1000	-88.89759721	45.52827960	88 53' 51.35" W	45 31' 41.81" N

Sample Number	Longitude (Decimal Degrees)	Latitude (Decimal Degrees)	Longitude (DMS)	Longitude (DMS)
1001	-88.89758314	45.52899956	88 53' 51.30" W	45 31' 44.40" N
1002	-88.89756907	45.52971951	88 53' 51.25" W	45 31' 46.99" N
1003	-88.89755501	45.53043946	88 53' 51.20" W	45 31' 49.58" N
1004	-88.89754094	45.53115942	88 53' 51.15" W	45 31' 52.17" N
1005	-88.89752687	45.53187937	88 53' 51.10" W	45 31' 54.77" N
1006	-88.89751280	45.53259932	88 53' 51.05" W	45 31' 57.36" N
1007	-88.89749874	45.53331928	88 53' 51.00" W	45 31' 59.95" N
1008	-88.89748467	45.53403923	88 53' 50.94" W	45 32' 2.54" N
1009	-88.89747060	45.53475918	88 53' 50.89" W	45 32' 5.13" N
1010	-88.89745653	45.53547914	88 53' 50.84" W	45 32' 7.72" N
1011	-88.89744245	45.53619909	88 53' 50.79" W	45 32' 10.32" N
1012	-88.89742838	45.53691904	88 53' 50.74" W	45 32' 12.91" N
1013	-88.89741431	45.53763899	88 53' 50.69" W	45 32' 15.50" N
1014	-88.89740024	45.53835895	88 53' 50.64" W	45 32' 18.09" N
1015	-88.89738617	45.53907890	88 53' 50.59" W	45 32' 20.68" N
1016	-88.89737209	45.53979885	88 53' 50.54" W	45 32' 23.28" N
1017	-88.89735802	45.54051880	88 53' 50.49" W	45 32' 25.87" N
1018	-88.89734394	45.54123875	88 53' 50.44" W	45 32' 28.46" N
1019	-88.89732987	45.54195871	88 53' 50.39" W	45 32' 31.05" N
1020	-88.89731579	45.54267866	88 53' 50.34" W	45 32' 33.64" N
1021	-88.89730172	45.54339861	88 53' 50.29" W	45 32' 36.23" N
1022	-88.89728764	45.54411856	88 53' 50.24" W	45 32' 38.83" N
1023	-88.89727356	45.54483851	88 53' 50.18" W	45 32' 41.42" N
1024	-88.89725948	45.54555847	88 53' 50.13" W	45 32' 44.01" N
1025	-88.89724541	45.54627842	88 53' 50.08" W	45 32' 46.60" N
1026	-88.89723133	45.54699837	88 53' 50.03" W	45 32' 49.19" N
1027	-88.89721725	45.54771832	88 53' 49.98" W	45 32' 51.79" N
1028	-88.89720317	45.54843827	88 53' 49.93" W	45 32' 54.38" N
1029	-88.89718909	45.54915822	88 53' 49.88" W	45 32' 56.97" N
1030	-88.89717501	45.54987817	88 53' 49.83" W	45 32' 59.56" N
1031	-88.89716092	45.55059812	88 53' 49.78" W	45 33' 2.15" N
1032	-88.89714684	45.55131807	88 53' 49.73" W	45 33' 4.75" N
1033	-88.89713276	45.55203803	88 53' 49.68" W	45 33' 7.34" N
1034	-88.89711868	45.55275798	88 53' 49.63" W	45 33' 9.93" N
1035	-88.89710459	45.55347793	88 53' 49.58" W	45 33' 12.52" N
1036	-88.89709051	45.55419788	88 53' 49.53" W	45 33' 15.11" N
1037	-88.89707642	45.55491783	88 53' 49.48" W	45 33' 17.70" N
1038	-88.89706234	45.55563778	88 53' 49.42" W	45 33' 20.30" N
1039	-88.89704825	45.55635773	88 53' 49.37" W	45 33' 22.89" N
1040	-88.89703416	45.55707768	88 53' 49.32" W	45 33' 25.48" N
1041	-88.89702008	45.55779763	88 53' 49.27" W	45 33' 28.07" N
1042	-88.89700599	45.55851758	88 53' 49.22" W	45 33' 30.66" N
1043	-88.89665737	45.52394999	88 53' 47.97" W	45 31' 26.22" N
1044	-88.89664329	45.52466994	88 53' 47.92" W	45 31' 28.81" N
1045	-88.89662922	45.52538990	88 53' 47.87" W	45 31' 31.40" N
1046	-88.89661514	45.52610985	88 53' 47.81" W	45 31' 34.00" N
1047	-88.89660106	45.52682980	88 53' 47.76" W	45 31' 36.59" N
1048	-88.89658698	45.52754976	88 53' 47.71" W	45 31' 39.18" N
1049	-88.89657291	45.52826971	88 53' 47.66" W	45 31' 41.77" N
1050	-88.89655883	45.52898966	88 53' 47.61" W	45 31' 44.36" N

Sample Number	Longitude (Decimal Degrees)	Latitude (Decimal Degrees)	Longitude (DMS)	Longitude (DMS)
1051	-88.89654475	45.52970962	88 53' 47.56" W	45 31' 46.95" N
1052	-88.89653067	45.53042957	88 53' 47.51" W	45 31' 49.55" N
1053	-88.89651659	45.53114952	88 53' 47.46" W	45 31' 52.14" N
1054	-88.89650251	45.53186948	88 53' 47.41" W	45 31' 54.73" N
1055	-88.89648843	45.53258943	88 53' 47.36" W	45 31' 57.32" N
1056	-88.89647434	45.53330938	88 53' 47.31" W	45 31' 59.91" N
1057	-88.89646026	45.53402934	88 53' 47.26" W	45 32' 2.51" N
1058	-88.89644618	45.53474929	88 53' 47.21" W	45 32' 5.10" N
1059	-88.89643210	45.53546924	88 53' 47.16" W	45 32' 7.69" N
1060	-88.89641801	45.53618919	88 53' 47.10" W	45 32' 10.28" N
1061	-88.89640393	45.53690915	88 53' 47.05" W	45 32' 12.87" N
1062	-88.89638984	45.53762910	88 53' 47.00" W	45 32' 15.46" N
1063	-88.89637576	45.53834905	88 53' 46.95" W	45 32' 18.06" N
1064	-88.89636167	45.53906900	88 53' 46.90" W	45 32' 20.65" N
1065	-88.89634758	45.53978896	88 53' 46.85" W	45 32' 23.24" N
1066	-88.89633350	45.54050891	88 53' 46.80" W	45 32' 25.83" N
1067	-88.89631941	45.54122886	88 53' 46.75" W	45 32' 28.42" N
1068	-88.89630532	45.54194881	88 53' 46.70" W	45 32' 31.02" N
1069	-88.89629123	45.54266876	88 53' 46.65" W	45 32' 33.61" N
1070	-88.89627714	45.54338871	88 53' 46.60" W	45 32' 36.20" N
1071	-88.89626305	45.54410867	88 53' 46.55" W	45 32' 38.79" N
1072	-88.89624896	45.54482862	88 53' 46.50" W	45 32' 41.38" N
1073	-88.89623487	45.54554857	88 53' 46.45" W	45 32' 43.97" N
1074	-88.89622078	45.54626852	88 53' 46.39" W	45 32' 46.57" N
1075	-88.89620669	45.54698847	88 53' 46.34" W	45 32' 49.16" N
1076	-88.89619259	45.54770842	88 53' 46.29" W	45 32' 51.75" N
1077	-88.89617850	45.54842837	88 53' 46.24" W	45 32' 54.34" N
1078	-88.89616441	45.54914832	88 53' 46.19" W	45 32' 56.93" N
1079	-88.89615031	45.54986827	88 53' 46.14" W	45 32' 59.53" N
1080	-88.89613622	45.55058823	88 53' 46.09" W	45 33' 2.12" N
1081	-88.89612212	45.55130818	88 53' 46.04" W	45 33' 4.71" N
1082	-88.89610803	45.55202813	88 53' 45.99" W	45 33' 7.30" N
1083	-88.89609393	45.55274808	88 53' 45.94" W	45 33' 9.89" N
1084	-88.89607984	45.55346803	88 53' 45.89" W	45 33' 12.48" N
1085	-88.89606574	45.55418798	88 53' 45.84" W	45 33' 15.08" N
1086	-88.89605164	45.55490793	88 53' 45.79" W	45 33' 17.67" N
1087	-88.89603754	45.55562788	88 53' 45.74" W	45 33' 20.26" N
1088	-88.89602344	45.55634783	88 53' 45.68" W	45 33' 22.85" N
1089	-88.89600934	45.55706778	88 53' 45.63" W	45 33' 25.44" N
1090	-88.89599524	45.55778773	88 53' 45.58" W	45 33' 28.04" N
1091	-88.89598114	45.55850768	88 53' 45.53" W	45 33' 30.63" N
1092	-88.89563315	45.52394009	88 53' 44.28" W	45 31' 26.18" N
1093	-88.89561906	45.52466004	88 53' 44.23" W	45 31' 28.78" N
1094	-88.89560497	45.52538000	88 53' 44.18" W	45 31' 31.37" N
1095	-88.89559088	45.52609995	88 53' 44.13" W	45 31' 33.96" N
1096	-88.89557679	45.52681990	88 53' 44.08" W	45 31' 36.55" N
1097	-88.89556270	45.52753986	88 53' 44.03" W	45 31' 39.14" N
1098	-88.89554861	45.52825981	88 53' 43.97" W	45 31' 41.74" N
1099	-88.89553452	45.52897976	88 53' 43.92" W	45 31' 44.33" N
1100	-88.89552042	45.52969972	88 53' 43.87" W	45 31' 46.92" N

Sample Number	Longitude (Decimal Degrees)	Latitude (Decimal Degrees)	Longitude (DMS)	Longitude (DMS)
1101	-88.89550633	45.53041967	88 53' 43.82" W	45 31' 49.51" N
1102	-88.89549224	45.53113962	88 53' 43.77" W	45 31' 52.10" N
1103	-88.89547814	45.53185958	88 53' 43.72" W	45 31' 54.69" N
1104	-88.89546405	45.53257953	88 53' 43.67" W	45 31' 57.29" N
1105	-88.89544995	45.53329948	88 53' 43.62" W	45 31' 59.88" N
1106	-88.89543586	45.53401943	88 53' 43.57" W	45 32' 2.47" N
1107	-88.89542176	45.53473939	88 53' 43.52" W	45 32' 5.06" N
1108	-88.89540767	45.53545934	88 53' 43.47" W	45 32' 7.65" N
1109	-88.89539357	45.53617929	88 53' 43.42" W	45 32' 10.25" N
1110	-88.89537947	45.53689924	88 53' 43.37" W	45 32' 12.84" N
1111	-88.89536537	45.53761920	88 53' 43.32" W	45 32' 15.43" N
1112	-88.89535127	45.53833915	88 53' 43.26" W	45 32' 18.02" N
1113	-88.89533718	45.53905910	88 53' 43.21" W	45 32' 20.61" N
1114	-88.89532308	45.53977905	88 53' 43.16" W	45 32' 23.20" N
1115	-88.89530898	45.54049900	88 53' 43.11" W	45 32' 25.80" N
1116	-88.89529487	45.54121896	88 53' 43.06" W	45 32' 28.39" N
1117	-88.89528077	45.54193891	88 53' 43.01" W	45 32' 30.98" N
1118	-88.89526667	45.54265886	88 53' 42.96" W	45 32' 33.57" N
1119	-88.89525257	45.54337881	88 53' 42.91" W	45 32' 36.16" N
1120	-88.89523847	45.54409876	88 53' 42.86" W	45 32' 38.76" N
1121	-88.89522436	45.54481871	88 53' 42.81" W	45 32' 41.35" N
1122	-88.89521026	45.54553866	88 53' 42.76" W	45 32' 43.94" N
1123	-88.89519615	45.54625861	88 53' 42.71" W	45 32' 46.53" N
1124	-88.89518205	45.54697856	88 53' 42.66" W	45 32' 49.12" N
1125	-88.89516794	45.54769852	88 53' 42.60" W	45 32' 51.71" N
1126	-88.89515384	45.54841847	88 53' 42.55" W	45 32' 54.31" N
1127	-88.89513973	45.54913842	88 53' 42.50" W	45 32' 56.90" N
1128	-88.89512562	45.54985837	88 53' 42.45" W	45 32' 59.49" N
1129	-88.89511152	45.55057832	88 53' 42.40" W	45 33' 2.08" N
1130	-88.89509741	45.55129827	88 53' 42.35" W	45 33' 4.67" N
1131	-88.89508330	45.55201822	88 53' 42.30" W	45 33' 7.27" N
1132	-88.89506919	45.55273817	88 53' 42.25" W	45 33' 9.86" N
1133	-88.89505508	45.55345812	88 53' 42.20" W	45 33' 12.45" N
1134	-88.89504097	45.55417807	88 53' 42.15" W	45 33' 15.04" N
1135	-88.89502686	45.55489802	88 53' 42.10" W	45 33' 17.63" N
1136	-88.89501275	45.55561797	88 53' 42.05" W	45 33' 20.22" N
1137	-88.89499863	45.55633792	88 53' 42.00" W	45 33' 22.82" N
1138	-88.89498452	45.55705787	88 53' 41.94" W	45 33' 25.41" N
1139	-88.89497041	45.55777782	88 53' 41.89" W	45 33' 28.00" N
1140	-88.89459483	45.52465014	88 53' 40.54" W	45 31' 28.74" N
1141	-88.89458072	45.52537009	88 53' 40.49" W	45 31' 31.33" N
1142	-88.89456662	45.52609004	88 53' 40.44" W	45 31' 33.92" N
1143	-88.89455252	45.52681000	88 53' 40.39" W	45 31' 36.52" N
1144	-88.89453841	45.52752995	88 53' 40.34" W	45 31' 39.11" N
1145	-88.89452431	45.52824990	88 53' 40.29" W	45 31' 41.70" N
1146	-88.89451021	45.52896986	88 53' 40.24" W	45 31' 44.29" N
1147	-88.89449610	45.52968981	88 53' 40.19" W	45 31' 46.88" N
1148	-88.89448199	45.53040976	88 53' 40.14" W	45 31' 49.48" N
1149	-88.89446789	45.53112971	88 53' 40.08" W	45 31' 52.07" N
1150	-88.89445378	45.53184967	88 53' 40.03" W	45 31' 54.66" N

Sample Number	Longitude (Decimal Degrees)	Latitude (Decimal Degrees)	Longitude (DMS)	Longitude (DMS)
1151	-88.89443967	45.53256962	88 53' 39.98" W	45 31' 57.25" N
1152	-88.89442556	45.53328957	88 53' 39.93" W	45 31' 59.84" N
1153	-88.89441146	45.53400952	88 53' 39.88" W	45 32' 2.43" N
1154	-88.89439735	45.53472948	88 53' 39.83" W	45 32' 5.03" N
1155	-88.89438324	45.53544943	88 53' 39.78" W	45 32' 7.62" N
1156	-88.89436913	45.53616938	88 53' 39.73" W	45 32' 10.21" N
1157	-88.89435502	45.53688933	88 53' 39.68" W	45 32' 12.80" N
1158	-88.89434091	45.53760928	88 53' 39.63" W	45 32' 15.39" N
1159	-88.89432679	45.53832924	88 53' 39.58" W	45 32' 17.99" N
1160	-88.89431268	45.53904919	88 53' 39.53" W	45 32' 20.58" N
1161	-88.89429857	45.53976914	88 53' 39.47" W	45 32' 23.17" N
1162	-88.89428446	45.54048909	88 53' 39.42" W	45 32' 25.76" N
1163	-88.89427034	45.54120904	88 53' 39.37" W	45 32' 28.35" N
1164	-88.89425623	45.54192899	88 53' 39.32" W	45 32' 30.94" N
1165	-88.89424211	45.54264894	88 53' 39.27" W	45 32' 33.54" N
1166	-88.89422800	45.54336890	88 53' 39.22" W	45 32' 36.13" N
1167	-88.89421388	45.54408885	88 53' 39.17" W	45 32' 38.72" N
1168	-88.89419976	45.54480880	88 53' 39.12" W	45 32' 41.31" N
1169	-88.89418565	45.54552875	88 53' 39.07" W	45 32' 43.90" N
1170	-88.89417153	45.54624870	88 53' 39.02" W	45 32' 46.50" N
1171	-88.89415741	45.54696865	88 53' 38.97" W	45 32' 49.09" N
1172	-88.89414329	45.54768860	88 53' 38.92" W	45 32' 51.68" N
1173	-88.89412917	45.54840855	88 53' 38.87" W	45 32' 54.27" N
1174	-88.89411505	45.54912850	88 53' 38.81" W	45 32' 56.86" N
1175	-88.89410093	45.54984845	88 53' 38.76" W	45 32' 59.45" N
1176	-88.89408681	45.55056840	88 53' 38.71" W	45 33' 2.05" N
1177	-88.89407269	45.55128835	88 53' 38.66" W	45 33' 4.64" N
1178	-88.89405857	45.55200830	88 53' 38.61" W	45 33' 7.23" N
1179	-88.89404445	45.55272825	88 53' 38.56" W	45 33' 9.82" N
1180	-88.89403032	45.55344820	88 53' 38.51" W	45 33' 12.41" N
1181	-88.89398795	45.55560805	88 53' 38.36" W	45 33' 20.19" N
1182	-88.89397383	45.55632800	88 53' 38.31" W	45 33' 22.78" N
1183	-88.89355648	45.52536017	88 53' 36.80" W	45 31' 31.30" N
1184	-88.89354236	45.52608013	88 53' 36.75" W	45 31' 33.89" N
1185	-88.89352825	45.52680008	88 53' 36.70" W	45 31' 36.48" N
1186	-88.89351413	45.52752003	88 53' 36.65" W	45 31' 39.07" N
1187	-88.89350001	45.52823998	88 53' 36.60" W	45 31' 41.66" N
1188	-88.89348589	45.52895994	88 53' 36.55" W	45 31' 44.26" N
1189	-88.89347178	45.52967989	88 53' 36.50" W	45 31' 46.85" N
1190	-88.89345766	45.53039984	88 53' 36.45" W	45 31' 49.44" N
1191	-88.89344354	45.53111979	88 53' 36.40" W	45 31' 52.03" N
1192	-88.89342942	45.53183975	88 53' 36.35" W	45 31' 54.62" N
1193	-88.89341530	45.53255970	88 53' 36.30" W	45 31' 57.21" N
1194	-88.89340118	45.53327965	88 53' 36.24" W	45 31' 59.81" N
1195	-88.89338705	45.53399960	88 53' 36.19" W	45 32' 2.40" N
1196	-88.89337293	45.53471956	88 53' 36.14" W	45 32' 4.99" N
1197	-88.89335881	45.53543951	88 53' 36.09" W	45 32' 7.58" N
1198	-88.89334469	45.53615946	88 53' 36.04" W	45 32' 10.17" N
1199	-88.89333056	45.53687941	88 53' 35.99" W	45 32' 12.77" N
1200	-88.89331644	45.53759936	88 53' 35.94" W	45 32' 15.36" N

Sample Number	Longitude (Decimal Degrees)	Latitude (Decimal Degrees)	Longitude (DMS)	Longitude (DMS)
1201	-88.89330231	45.53831931	88 53' 35.89" W	45 32' 17.95" N
1202	-88.89328819	45.53903927	88 53' 35.84" W	45 32' 20.54" N
1203	-88.89327406	45.53975922	88 53' 35.79" W	45 32' 23.13" N
1204	-88.89325994	45.54047917	88 53' 35.74" W	45 32' 25.73" N
1205	-88.89324581	45.54119912	88 53' 35.68" W	45 32' 28.32" N
1206	-88.89323168	45.54191907	88 53' 35.63" W	45 32' 30.91" N
1207	-88.89321755	45.54263902	88 53' 35.58" W	45 32' 33.50" N
1208	-88.89320342	45.54335897	88 53' 35.53" W	45 32' 36.09" N
1209	-88.89318930	45.54407892	88 53' 35.48" W	45 32' 38.68" N
1210	-88.89317517	45.54479887	88 53' 35.43" W	45 32' 41.28" N
1211	-88.89316104	45.54551882	88 53' 35.38" W	45 32' 43.87" N
1212	-88.89314690	45.54623877	88 53' 35.33" W	45 32' 46.46" N
1213	-88.89309038	45.54911857	88 53' 35.13" W	45 32' 56.83" N
1214	-88.89307624	45.54983852	88 53' 35.07" W	45 32' 59.42" N
1215	-88.89306211	45.55055847	88 53' 35.02" W	45 33' 2.01" N
1216	-88.89251810	45.52607020	88 53' 33.07" W	45 31' 33.85" N
1217	-88.89250398	45.52679015	88 53' 33.01" W	45 31' 36.44" N
1218	-88.89248985	45.52751010	88 53' 32.96" W	45 31' 39.04" N
1219	-88.89247572	45.52823006	88 53' 32.91" W	45 31' 41.63" N
1220	-88.89246158	45.52895001	88 53' 32.86" W	45 31' 44.22" N
1221	-88.89244745	45.52966996	88 53' 32.81" W	45 31' 46.81" N
1222	-88.89243332	45.53038991	88 53' 32.76" W	45 31' 49.40" N
1223	-88.89241919	45.53110987	88 53' 32.71" W	45 31' 52.00" N
1224	-88.89240506	45.53182982	88 53' 32.66" W	45 31' 54.59" N
1225	-88.89239092	45.53254977	88 53' 32.61" W	45 31' 57.18" N
1226	-88.89237679	45.53326972	88 53' 32.56" W	45 31' 59.77" N
1227	-88.89236265	45.53398967	88 53' 32.51" W	45 32' 2.36" N
1228	-88.89234852	45.53470963	88 53' 32.45" W	45 32' 4.95" N
1229	-88.89233438	45.53542958	88 53' 32.40" W	45 32' 7.55" N
1230	-88.89232025	45.53614953	88 53' 32.35" W	45 32' 10.14" N
1231	-88.89230611	45.53686948	88 53' 32.30" W	45 32' 12.73" N
1232	-88.89229197	45.53758943	88 53' 32.25" W	45 32' 15.32" N
1233	-88.89227783	45.53830938	88 53' 32.20" W	45 32' 17.91" N
1234	-88.89226369	45.53902933	88 53' 32.15" W	45 32' 20.51" N
1235	-88.89224956	45.53974928	88 53' 32.10" W	45 32' 23.10" N
1236	-88.89223542	45.54046924	88 53' 32.05" W	45 32' 25.69" N
1237	-88.89222128	45.54118919	88 53' 32.00" W	45 32' 28.28" N
1238	-88.89220714	45.54190914	88 53' 31.95" W	45 32' 30.87" N
1239	-88.89219299	45.54262909	88 53' 31.89" W	45 32' 33.46" N
1240	-88.89217885	45.54334904	88 53' 31.84" W	45 32' 36.06" N
1241	-88.89216471	45.54406899	88 53' 31.79" W	45 32' 38.65" N
1242	-88.89215057	45.54478894	88 53' 31.74" W	45 32' 41.24" N
1243	-88.89213642	45.54550889	88 53' 31.69" W	45 32' 43.83" N
1244	-88.89147971	45.52678021	88 53' 29.33" W	45 31' 36.41" N
1245	-88.89146556	45.52750017	88 53' 29.28" W	45 31' 39.00" N
1246	-88.89145142	45.52822012	88 53' 29.23" W	45 31' 41.59" N
1247	-88.89143727	45.52894007	88 53' 29.17" W	45 31' 44.18" N
1248	-88.89142313	45.52966002	88 53' 29.12" W	45 31' 46.78" N
1249	-88.89140899	45.53037998	88 53' 29.07" W	45 31' 49.37" N
1250	-88.89139484	45.53109993	88 53' 29.02" W	45 31' 51.96" N

Sample Number	Longitude (Decimal Degrees)	Latitude (Decimal Degrees)	Longitude (DMS)	Longitude (DMS)
1251	-88.89138069	45.53181988	88 53' 28.97" W	45 31' 54.55" N
1252	-88.89136655	45.53253983	88 53' 28.92" W	45 31' 57.14" N
1253	-88.89135240	45.53325978	88 53' 28.87" W	45 31' 59.74" N
1254	-88.89133825	45.53397973	88 53' 28.82" W	45 32' 2.33" N
1255	-88.89132410	45.53469969	88 53' 28.77" W	45 32' 4.92" N
1256	-88.89130995	45.53541964	88 53' 28.72" W	45 32' 7.51" N
1257	-88.89129581	45.53613959	88 53' 28.66" W	45 32' 10.10" N
1258	-88.89128166	45.53685954	88 53' 28.61" W	45 32' 12.69" N
1259	-88.89126750	45.53757949	88 53' 28.56" W	45 32' 15.29" N
1260	-88.89125335	45.53829944	88 53' 28.51" W	45 32' 17.88" N
1261	-88.89123920	45.53901939	88 53' 28.46" W	45 32' 20.47" N
1262	-88.89122505	45.53973934	88 53' 28.41" W	45 32' 23.06" N
1263	-88.89121090	45.54045929	88 53' 28.36" W	45 32' 25.65" N
1264	-88.89119674	45.54117925	88 53' 28.31" W	45 32' 28.25" N
1265	-88.89118259	45.54189920	88 53' 28.26" W	45 32' 30.84" N
1266	-88.89116844	45.54261915	88 53' 28.21" W	45 32' 33.43" N
1267	-88.89115428	45.54333910	88 53' 28.16" W	45 32' 36.02" N
1268	-88.89114013	45.54405905	88 53' 28.10" W	45 32' 38.61" N
1269	-88.89112597	45.54477900	88 53' 28.05" W	45 32' 41.20" N
1270	-88.89044128	45.52749022	88 53' 25.59" W	45 31' 38.96" N
1271	-88.89042712	45.52821017	88 53' 25.54" W	45 31' 41.56" N
1272	-88.89041297	45.52893013	88 53' 25.49" W	45 31' 44.15" N
1273	-88.89039881	45.52965008	88 53' 25.44" W	45 31' 46.74" N
1274	-88.89038465	45.53037003	88 53' 25.38" W	45 31' 49.33" N
1275	-88.89037049	45.53108998	88 53' 25.33" W	45 31' 51.92" N
1276	-88.89035633	45.53180993	88 53' 25.28" W	45 31' 54.52" N
1277	-88.89034217	45.53252988	88 53' 25.23" W	45 31' 57.11" N
1278	-88.89032801	45.53324984	88 53' 25.18" W	45 31' 59.70" N
1279	-88.89031385	45.53396979	88 53' 25.13" W	45 32' 2.29" N
1280	-88.89029969	45.53468974	88 53' 25.08" W	45 32' 4.88" N
1281	-88.89028553	45.53540969	88 53' 25.03" W	45 32' 7.47" N
1282	-88.89027137	45.53612964	88 53' 24.98" W	45 32' 10.07" N
1283	-88.89025720	45.53684959	88 53' 24.93" W	45 32' 12.66" N
1284	-88.89024304	45.53756954	88 53' 24.87" W	45 32' 15.25" N
1285	-88.89022887	45.53828949	88 53' 24.82" W	45 32' 17.84" N
1286	-88.89021471	45.53900944	88 53' 24.77" W	45 32' 20.43" N
1287	-88.89020055	45.53972939	88 53' 24.72" W	45 32' 23.03" N
1288	-88.89015805	45.54188925	88 53' 24.57" W	45 32' 30.80" N
1289	-88.88940283	45.52820022	88 53' 21.85" W	45 31' 41.52" N
1290	-88.88938866	45.52892017	88 53' 21.80" W	45 31' 44.11" N
1291	-88.88937449	45.52964012	88 53' 21.75" W	45 31' 46.70" N
1292	-88.88936032	45.53036007	88 53' 21.70" W	45 31' 49.30" N
1293	-88.88934614	45.53108003	88 53' 21.65" W	45 31' 51.89" N
1294	-88.88933197	45.53179998	88 53' 21.60" W	45 31' 54.48" N
1295	-88.88931780	45.53251993	88 53' 21.54" W	45 31' 57.07" N
1296	-88.88930363	45.53323988	88 53' 21.49" W	45 31' 59.66" N
1297	-88.88928945	45.53395983	88 53' 21.44" W	45 32' 2.26" N
1298	-88.88927528	45.53467978	88 53' 21.39" W	45 32' 4.85" N
1299	-88.88926110	45.53539973	88 53' 21.34" W	45 32' 7.44" N
1300	-88.88924693	45.53611968	88 53' 21.29" W	45 32' 10.03" N

Sample Number	Longitude (Decimal Degrees)	Latitude (Decimal Degrees)	Longitude (DMS)	Longitude (DMS)
1301	-88.88923275	45.53683963	88 53' 21.24" W	45 32' 12.62" N
1302	-88.88921857	45.53755958	88 53' 21.19" W	45 32' 15.21" N
1303	-88.88920440	45.53827953	88 53' 21.14" W	45 32' 17.81" N
1304	-88.88832180	45.53107006	88 53' 17.96" W	45 31' 51.85" N
1305	-88.88830761	45.53179001	88 53' 17.91" W	45 31' 54.44" N
1306	-88.88829343	45.53250996	88 53' 17.86" W	45 31' 57.04" N
1307	-88.88827924	45.53322991	88 53' 17.81" W	45 31' 59.63" N
1308	-88.88826505	45.53394986	88 53' 17.75" W	45 32' 2.22" N
1309	-88.88825086	45.53466981	88 53' 17.70" W	45 32' 4.81" N
1310	-88.88728325	45.53178004	88 53' 14.22" W	45 31' 54.41" N
1311	-88.88726905	45.53249999	88 53' 14.17" W	45 31' 57.00" N