Lower Green Bay and Fox River AOC Aesthetics Citizen Monitoring Report

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INTRODUCTION

The Degraded Aesthetics beneficial use impairment (BUI) delisting targets for the Lower Green Bay and Fox River Area of Concern (AOC) reference monitoring data and/or surveys within the AOC for any five year period (WDNR, 2009). NEW Water's (Green Bay Metropolitan Sewerage District's) ambient monitoring program collects water quality data at several stations in the AOC. Because the aesthetic parameters, including "floating or submerged debris, oil, scum" and "materials producing color, odor, taste, or unsightliness," detailed in the delisting target are subjective in nature and involve personal interpretation of what is an "unacceptable level" or an "objectionable" amount that would interfere with public rights or impair use, a program to assess public perception was needed.

The Lower Green Bay and Fox River AOC Aesthetics Citizen Monitoring Program was developed to involve local residents in the process for evaluating the Degraded Aesthetics BUI. This approach provided opportunities to expand public participation, collect data at minimal cost, incorporate public input when evaluating BUI status, provide guidance for delisting BUI targets, and identify management options. A pilot monitoring program was launched with local residents in fall of 2011. This program was then expanded in 2012 and 2013 to include more volunteers, more sites, and a longer monitoring season. Public access points throughout the AOC were selected as monitoring sites (see Figure 1). The 11 sites include 8 sites along the Fox River, 2 sites in the Bay of Green Bay, and 1 site at Duck Creek. The Duck Creek (Wietor Wharf) site was added in 2013 to replace the Lineville Road site due to access issues. The survey developed for this program was three pages long, and included a combination of objective and subjective questions. See Appendix A for the 2012 and 2013 survey forms.

In 2013, a UW-Green Bay student was hired to conduct short surveys of citizens using the same sites that were evaluated by the dedicated volunteers. The survey (see Appendix C) was only five questions long, and included some of the same questions on the long survey form, including the question regarding their overall aesthetic impression of the site. The purpose of the survey was to gather opinions from the broader public in order to provide additional input on the status of the impairment from the people who were actually using the resource.

The objective of this report is to provide a summary of the aesthetics monitoring survey results for each site evaluated. Based on the results, recommendations will be made regarding the status of the Degraded Aesthetics BUI, management options will be identified for site improvement if action is required, and suggestions will be made for improving the citizen monitoring program.

METHODS

Volunteer Monitoring

All citizen monitoring volunteers were required to attend a training event prior to conducting surveys. During the training, coordinators explained the survey and how to correctly fill out the citizen monitoring data sheet (Appendix A), but care was taken not to bias surveyor opinions. Participants were supplied with an equipment kit including the following: bucket pole sampler, transparency tube, nylon for filtering debris, digital camera, a clipboard, and a backpack. For the 2013 monitoring season, taking transparency was optional. Participants followed sampling protocol according to the Aesthetics Monitoring Methods (Appendix B), though transparency tube reading and garbage type methodology was adapted from the Water Action Volunteer Stream Monitoring and Adopt-a-Beach Program. Following the 2012 survey year, adjustments were made to the monitoring data sheets to make them more user friendly and additional questions were added to bolster the survey.

For the 2012 and 2013 seasons, volunteers were asked to sign up for at least 3 monitoring sites, and to survey each during at least 2 seasons. For this project, seasons were divided into spring (April and May), summer (June, July, and August), and fall (September,

October, and November). The goal was to have at least 3 volunteers signed up for each site. Volunteers conducted the surveys on their own schedules, and returned the completed surveys (by mail, fax, e-mail, or in person) to Laurel Last, the AOC Coordinator. If they took photos, they also sent the digital photo files to Laurel. Laurel reviewed the surveys and then sent them on to the Aesthetics Data Support LTE for entry into the WDNR Surface Water Integrated Monitoring System (SWIMS) database.

Citizen Surveys

The student surveyor utilized a tablet computer and a mobile hotspot during data collection. Rather than collect survey data on paper and then have to transfer responses into the SWIMS database at a later time, it was decided to utilize the tablet and mobile hotspot to directly enter the responses into SWIMS as the respondent was engaged. This saved a step in the data collection process and left more time for the student to collect survey data. The student also carried paper copies of the survey form as a back-up in case of trouble with the electronic system. Since SWIMS logs off if there is no activity for 15 minutes, he found that in some circumstances it was more convenient to use the paper forms and enter the data into SWIMS at a later time. He also carried a laminated copy of the survey so the citizens could follow along as he asked them the survey questions.

The student visited the eleven survey sites on his own schedule, starting in June. He set up a rotating weekly schedule (3 or 4 sites each week) to visit all of the locations on a regular basis. Initially, he visited each one for an equal length of time, but he learned that the number of people using the sites differed quite a bit. Rather than waste his time at a site that was rarely visited, he opted to gather more surveys by waiting for about ten minutes at a site and then, if there was nobody to interview, moving on to another site. If he knew a big event was going on he made sure to go to the park nearest to the event if possible (e.g., De Pere Days in Voyageur Park, Tall Ship Festival at Metro Boat launch). After his initial visit to the Bay Beach site, he decided not to collect surveys there due to the difficulty in getting to the water. (Visitors do not currently use the shoreline because of the invasive Phragmites.)

ANALYSIS

Volunteer Monitoring

The volunteer monitoring program resulted in the completion of 8 surveys in 2011, 60 surveys in 2012, and 72 surveys in 2013. Numbers were lower than expected, because volunteers did not always follow through on the surveys they planned to do. The goal for each station was to have at least three volunteers visit each station during at least 2 different monitoring seasons. Seasons were divided into spring (April and May), summer (June, July, and August), and fall (September, October, and November). In order to meet this goal the 2011, 2012, and 2013 surveys were combined for each site resulting in 8 of 11 sites meeting the goal criteria. Any surveys that were incomplete and could not legitimately be completed were not included in analysis. There were 3 sites that did not meet the three volunteer requirements during at least 2 seasons; however, two were included in analysis in order to utilize all data. Analysis was not conducted for the Duck Creek Wietor Wharf site because it was added in 2013 and only 3 surveys were completed.

A ranking system was developed for each survey and questions were assigned a point value. Volunteer monitors were required to rank the overall aesthetic impression of the site as: very pleasing (rank = 0), somewhat pleasing (rank = 1), neutral (rank = 2), somewhat displeasing (rank = 3), or very displeasing (rank = 4). An assessment score was also attained for each survey that included adding the points for 10 yes or no questions where an answer of “yes” received a 1 and “no” a 0 (Appendix C). Mean overall aesthetic impression and assessment scores were calculated for each site allowing for comparisons to be made among sites (higher scores indicated a more aesthetically displeasing site). In addition, sites were also assessed individually by examining specific aesthetic parameters and calculating the percent of surveys that were chosen as aesthetically displeasing (i.e. if yes was selected for invasive species in 3 of 4 surveys the percent would be 75%). This was also conducted on a seasonal basis (spring, summer, and fall) to assess seasonal trend and identify problem areas.

In order to develop site-based management recommendations several criteria for identifying problem areas were developed. Problem sites that may require some form of remediation were identified as those meeting at least one of the following criteria:

- Mean overall aesthetic impression ranks of $\geq$ 3
- Mean assessment score of $\geq$ 5
- Sites with aesthetic parameters that are classified as aesthetically displeasing in $\geq$ 75% of total surveys

Citizen Surveys

Action criteria were not set for the 2013 citizen survey project. It was meant to supplement the information being gathered by the volunteer monitoring program, and to test this additional method for gathering opinions on the Degraded Aesthetics impairment. The citizen survey did include the question about overall aesthetic impression of the site (Question #2), so a mean overall aesthetic impression rank could be calculated, just as with the volunteer monitoring program data. Numerical ranks were also assigned to the answers for Questions #3 and #4 in order to visualize the results by site using histograms (not included in this report).

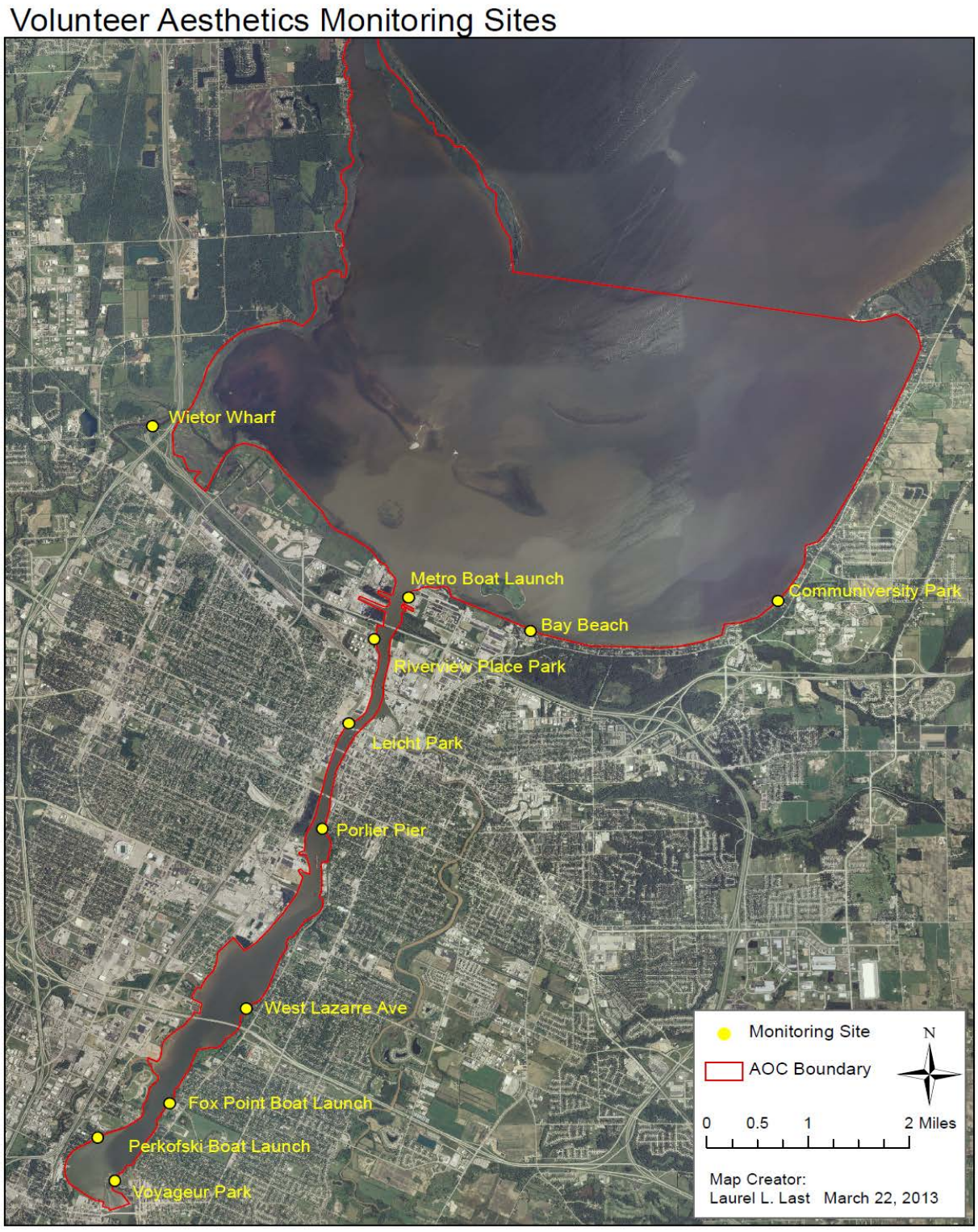


Figure 1. Monitoring site locations for the Lower Green Bay and Fox River AOC Aesthetics Citizen Monitoring Program during the 2011-2013 sampling seasons, the Wietor Wharf site was added in 2013. The AOC boundary is outlined in red.

RESULTS

Volunteer Monitoring

Fox River-Voyageur Park

There were a total of 20 aesthetic monitoring surveys conducted at the Fox River-Voyageur Park from 2011-2013. The mean aesthetic impression rank was 1.6, falling between somewhat pleasing and neutral. Somewhat pleasing (rank = 1) was selected on 9 surveys; however, somewhat displeasing was also chosen in 6 surveys (Figure 2). The mean assessment score at Fox River-Voyageur Park was 2.3 and 0 was the most common assessment score (6 surveys; Figure 3). In addition, there were no assessment scores greater than 6. Shoreline garbage was also selected in 40% of surveys with street and food litter noted as aesthetically displeasing (Table 1). Floating algae was selected in 35% of surveys, but a seasonal peak occurred in fall when it was selected in 50% of surveys. Conversely, submerged garbage had a seasonal peak in spring where it was selected in 60% of surveys (Table 1).

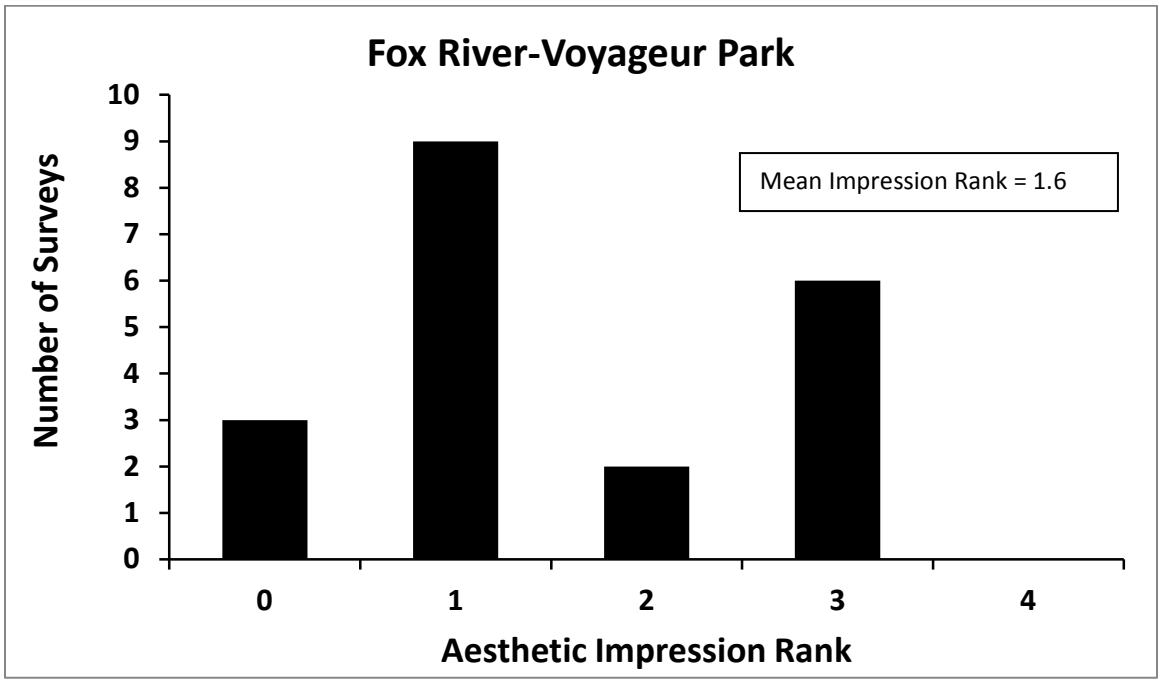


Figure 2. Aesthetic impression rank and number of surveys for the 2011-2013 aesthetics monitoring surveys at the Fox River-Voyageur Park.

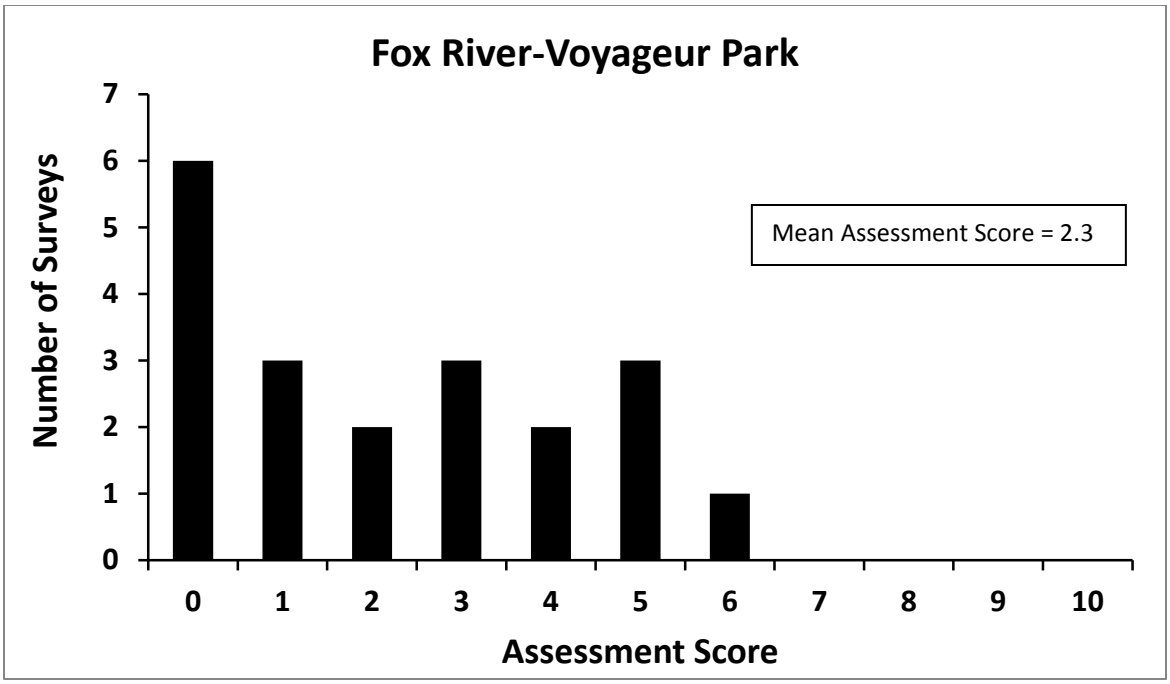


Figure 3. Assessment score and number of surveys for the 2011-2013 aesthetics monitoring surveys at the Fox River-Voyageur Park.

Table 1. Percent (%) of surveys for the Fox River-Voyageur Park that an aesthetic parameter was selected as displeasing. The number in parentheses under season and total indicates the number of surveys completed.

Aesthetic Parameter	Spring (N = 5)	Summer (N = 9)	Fall (N = 6)	Total (N = 20)
Materials (color, odor, taste, or unsightliness)	40	33	33	35
Submerged Garbage (on the shoreline or bottom)	60	22	0	25
Shoreline Garbage (on the shoreline or bottom)	40	44	33	40
Animals (on the shoreline or bottom)	20	11	17	15
Dead Animals (on the shoreline or bottom)	0	11	0	5
Invasive Species (on the shoreline or bottom)	0	11	0	5
Other things unpleasant (on the shoreline or bottom)	0	0	33	10
Floating Garbage (in the water)	20	22	17	20
Floating Algae (in the water)	20	33	50	35
Other Floating Material (in the water)	40	11	17	20

Fox River-Voyageur Park, 08/29/2012, Nicole Van Helden

Fox River-Voyageur Park (submerged garbage), 05/31/2013, Julia Noordyk

Fox River-Voyageur Park Pier View (floating algae), 08/29/2013, Julia Noordyk

Fox River-Perkofski Boat Landing

From 2011-2013 there were 11 aesthetics monitoring surveys conducted at the Perkofski Boat Landing. The mean impression rank was 1.6 and somewhat pleasing (rank = 1) was selected the most (Figure 4). The mean assessment score for the Perkofski Boat Landing was 2.6 with scores ranging from 0 to 6 (Figure 5). Unpleasant materials and shoreline garbage were selected as displeasing factors in 55% of surveys; however, a seasonal peak in summer occurred with each parameter selected in 75% of surveys (Table 2). Displeasing materials selected as aesthetically displeasing included weeds and algae along the shoreline while household waste was commonly listed for shoreline garbage. Floating algae mostly classified as green soupy was noted in 50% of surveys during summer and fall. Goose droppings were also listed as making the site unpleasant in 50% of summer and fall surveys (Table 2).

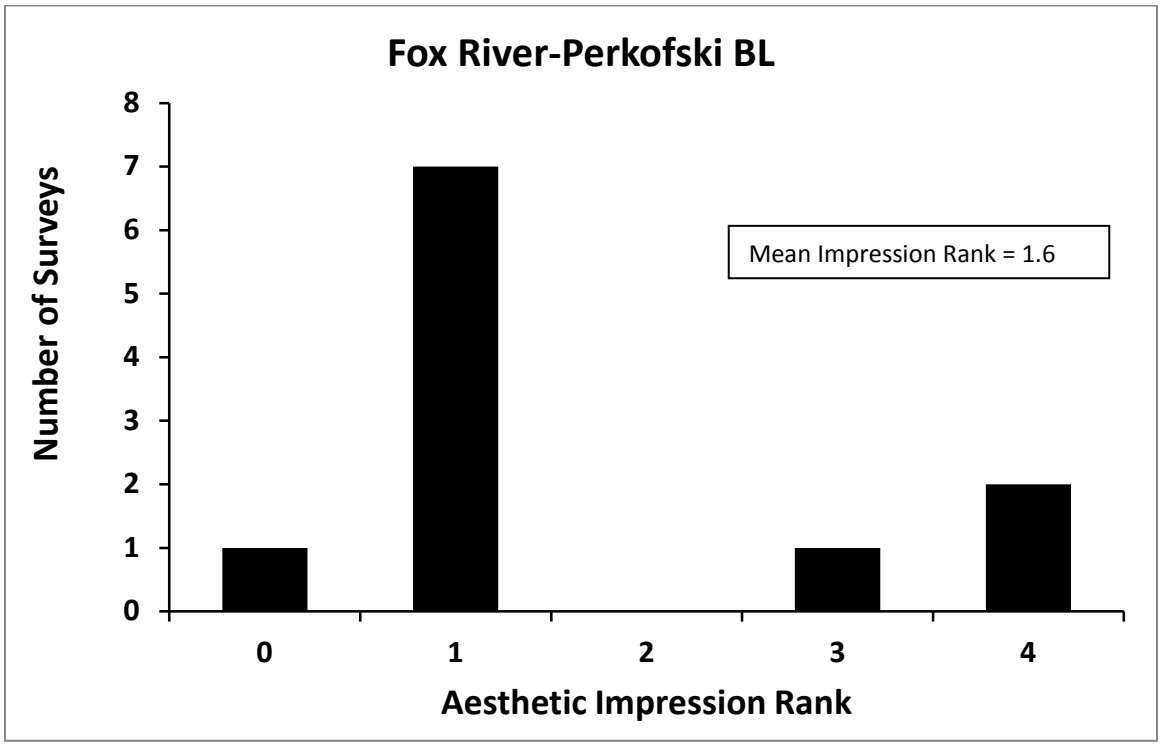


Figure 4. Aesthetic impression rank and number of surveys for the 2011-2013 aesthetics monitoring surveys at the Fox River-Perkofski Boat Landing.

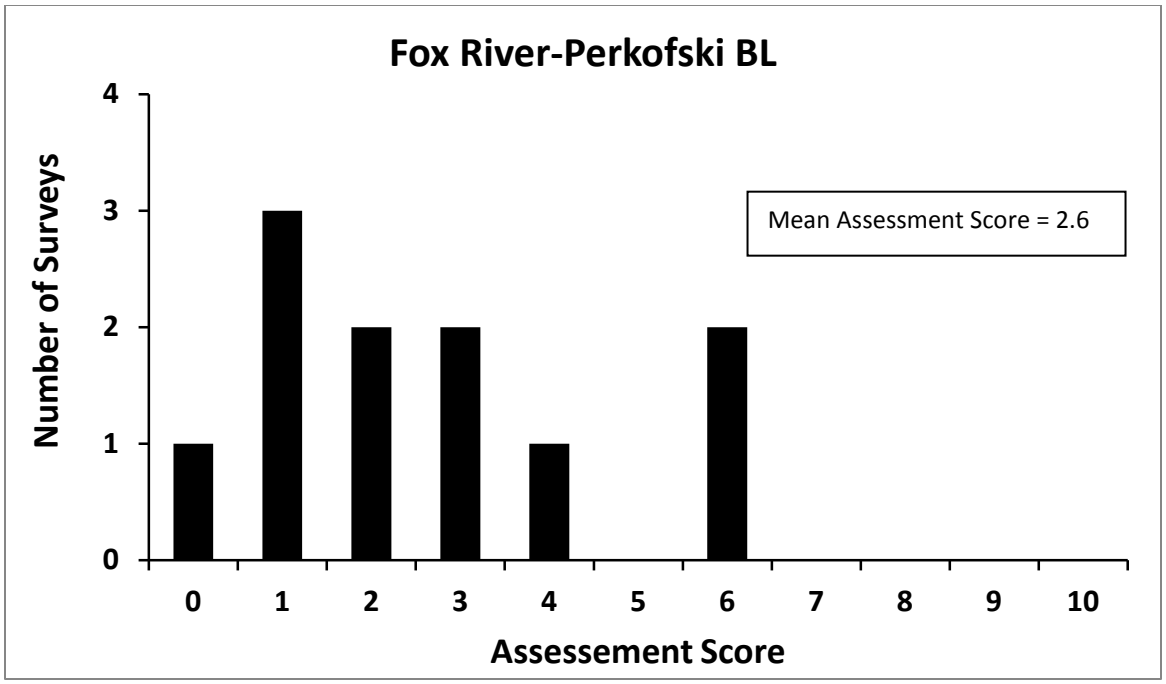


Figure 5. Assessment score and number of surveys for the 2011-2013 aesthetics monitoring surveys at the Fox River-Perkofski Boat Landing.

Table 2. Percent (%) of surveys for the Fox River-Perkofski Boat Landing that an aesthetic parameter was selected as displeasing. The number in parentheses under season and total indicates the number of surveys completed.

Aesthetic Parameter	Spring (N = 3)	Summer (N = 4)	Fall (N = 4)	Total (N = 11)
Materials (color, odor, taste, or unsightliness)	67	75	25	55
Submerged Garbage (on the shoreline or bottom)	0	0	0	0
Shoreline Garbage (on the shoreline or bottom)	67	75	25	55
Animals (on the shoreline or bottom)	0	50	50	36
Dead Animals (on the shoreline or bottom)	0	0	0	0
Invasive Species (on the shoreline or bottom)	0	25	25	18
Other things unpleasant (on the shoreline or bottom)	33	25	0	18
Floating Garbage (in the water)	0	0	25	9
Floating Algae (in the water)	33	50	50	45
Other Floating Material (in the water)	33	50	0	27

Fox River-Perkofski Boat Landing (goose droppings on pier), 10/07/2011, Nicole Van Helden

Fox River-Perkofski Boat Landing (green soupy algae bloom), 08/29/2012, Cheryl Bougie

Fox River-Perkofski Boat Landing (attached algae), 07/25/2013, Cheryl Bougie

Fox River-Fox Point Boat Landing

From 2011-2013 a total of 20 aesthetic monitoring surveys were completed at the Fox River-Fox Point Boat Landing. The mean aesthetic impression rank was 1.4, falling between the somewhat pleasing and neutral description (Figure 6). Somewhat pleasing (rank = 1) was selected the most (10 selections) while the neutral designation (rank = 2) was only selected in one survey (Figure 6). Assessment scores for the Fox River-Fox Point Boat Landing ranged from 0 to 7 and the mean assessment score was 2.6 (Figure 7). Shoreline garbage was selected in 55% of surveys and during the summer season shoreline garbage was selected in 67% of surveys (Table 3). Food related litter, street litter, and household waste were the most commonly selected items for shoreline garbage. The materials and invasive species parameters were selected in 45% of surveys, but seasonal trends were not apparent (Table 3). Materials that were often identified included goose droppings and turbid water, while Phragmites was the dominant invasive species found. Floating algae in the form of green soupy was selected in 40% of surveys, but major differences were not observed among seasons (Table 3). No other aesthetic parameter was selected in greater than 20% of surveys (Table 3).

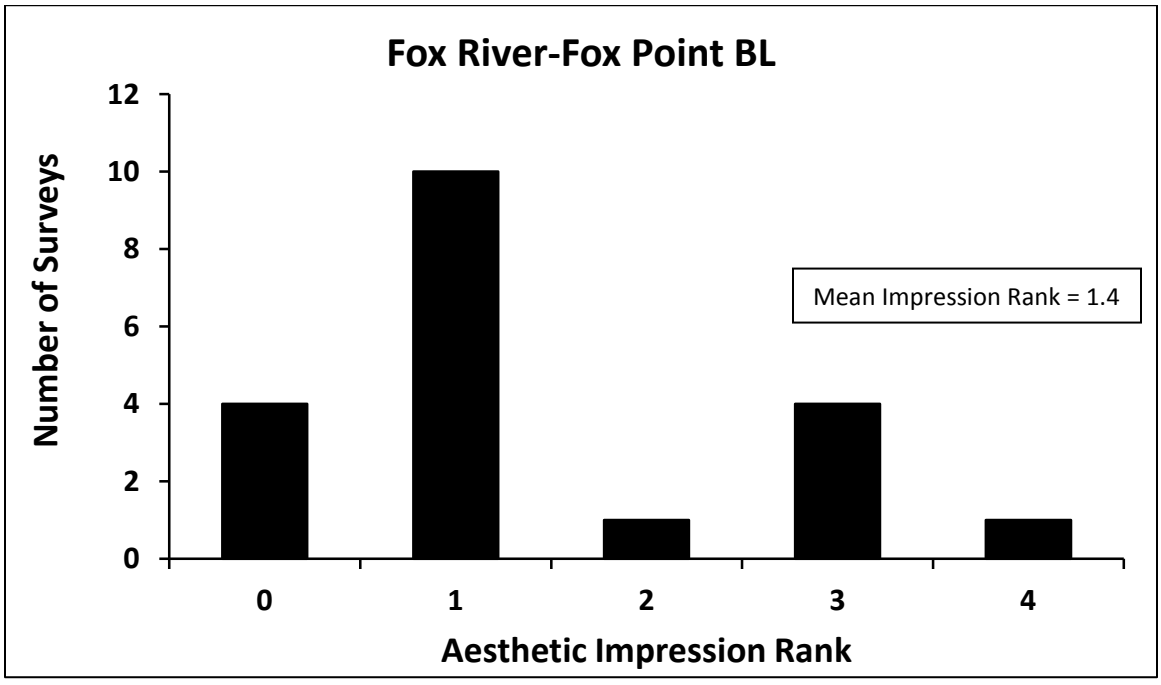


Figure 6. Aesthetic impression rank and number of surveys for the 2011-2013 aesthetics monitoring surveys at the Fox River-Fox Point Boat Landing.

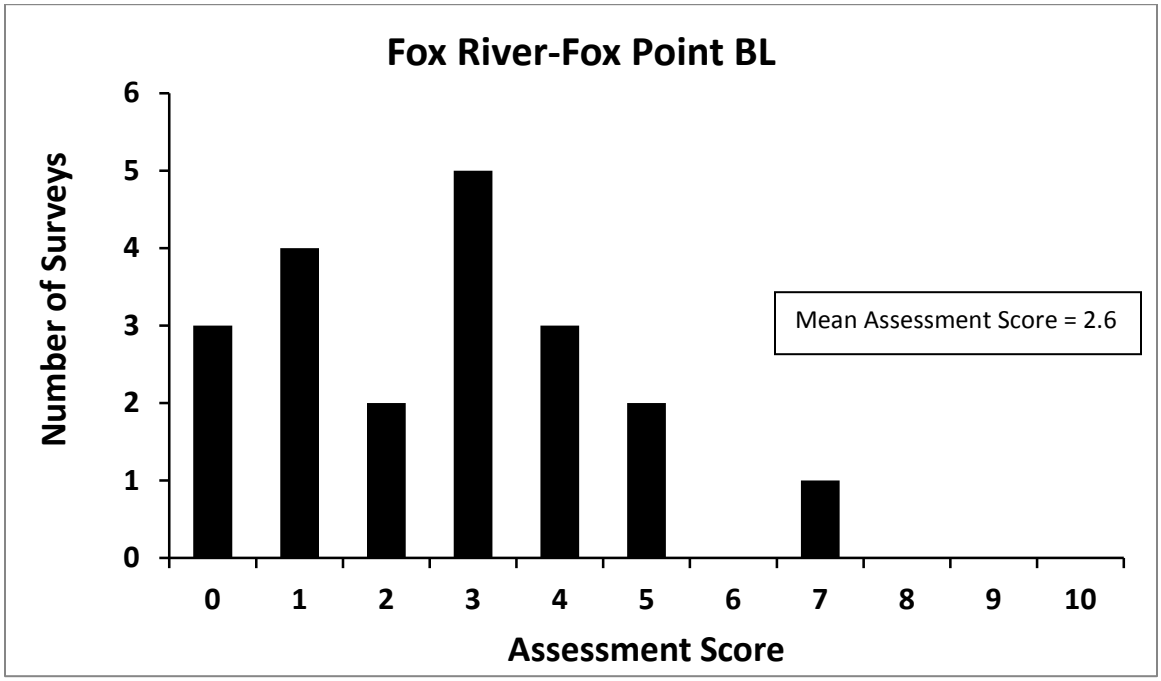


Figure 7. Assessment score and number of surveys for the 2011-2013 aesthetics monitoring surveys at the Fox River-Fox Point Landing.

Table 3. Percent (%) of surveys for the Fox River-Fox Point Boat Landing that an aesthetic parameter was selected as displeasing. The number in parentheses under season and total indicates the number of surveys completed.

Aesthetic Parameter	Spring (N = 6)	Summer (N = 9)	Fall (N = 5)	Total (N = 20)
Materials (color, odor, taste, or unsightliness)	50	44	40	45
Submerged Garbage (on the shoreline or bottom)	0	33	0	15
Shoreline Garbage (on the shoreline or bottom)	33	67	60	55
Animals (on the shoreline or bottom)	17	22	20	20
Dead Animals (on the shoreline or bottom)	17	11	0	10
Invasive Species (on the shoreline or bottom)	50	44	40	45
Other things unpleasant (on the shoreline or bottom)	17	11	0	10
Floating Garbage (in the water)	0	0	0	0
Floating Algae (in the water)	33	44	40	40
Other Floating Material (in the water)	33	22	0	20

Fox River-Fox Point Boat Landing (Phragmites), Cheryl Bougie, 07/25/13

Fox River-Fox Point Boat Landing (goose droppings), Cheryl Bougie, 07/25/13

Fox River-Fox Point Boat Landing (floating algae), Cheryl Bougie, 09/29/13

Fox River-West Lazarre Avenue

There were 16 aesthetics monitoring surveys completed during the 2011-2013 seasons. The mean impression rank for the Fox River-West Lazarre Avenue site was 1.9, falling just below the neutral (2) category (Figure 8). Assessment scores ranged from 0 to 6 and the mean assessment score was 2.8 (Figure 9). There were 4 surveys with assessment scores of 1 and 4. The most frequently selected aesthetic parameter was shoreline garbage that was selected in 69% of total surveys (Table 4). Seasonal patterns were observed with shoreline garbage selected in 75% of surveys during the summer and fall. Food related litter, street litter, and building materials were the most common items selected as displeasing for shoreline garbage. Displeasing materials also showed seasonal trends with being selected in 75% of spring surveys and 63% of summer surveys (Table 4). Floating algae was selected in 50% of total surveys, but reached 63% during the summer. Green soupy and blobs of algae were selected as the dominant forms of floating algae. Invasive species largely in the form of Phragmites were noted as displeasing in 50% of surveys during the spring and summer. Lastly, submerged garbage was selected in 33% of total surveys, but increased to 50% of surveys in summer. No other aesthetic parameter was selected in greater than 13% of total surveys and displeasing animals as well as floating garbage were not selected in any surveys (Table 4).

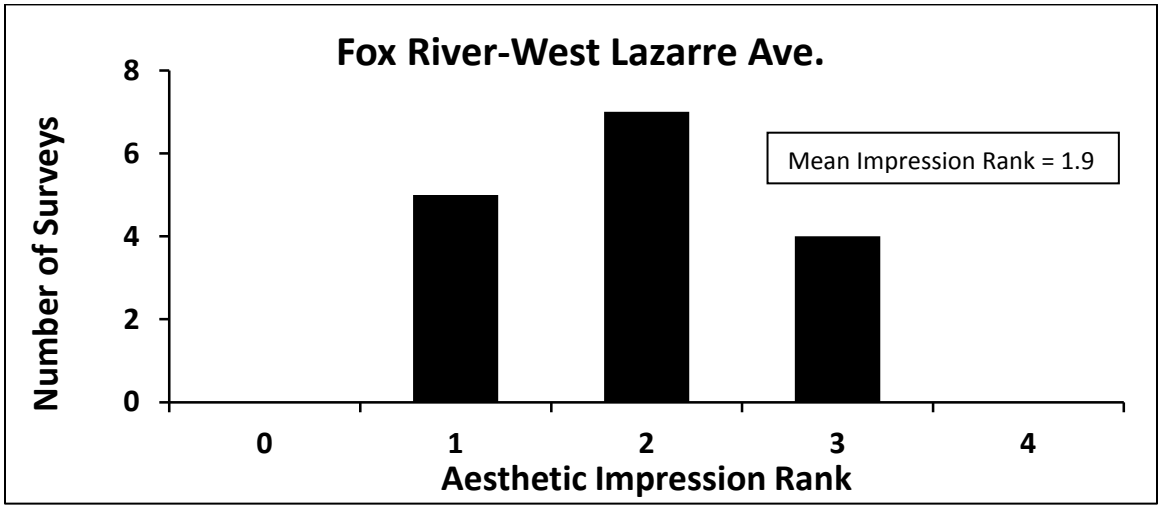


Figure 8. Aesthetic impression rank and number of surveys for the 2011-2013 aesthetics monitoring surveys at the Fox River-West Lazarre Avenue.

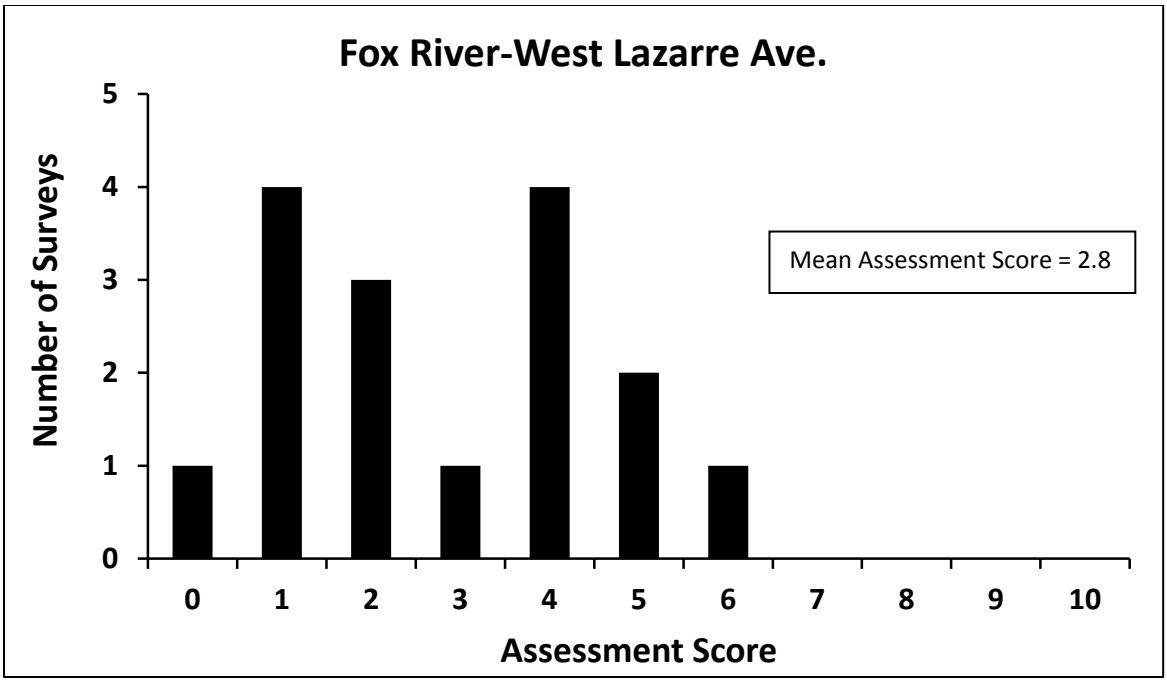


Figure 9. Aesthetic impression rank and number of surveys for the 2011-2013 aesthetics monitoring surveys at the Fox River-West Lazarre Avenue.

Table 4. Percent (%) of surveys for the Fox River-West Lazarre Ave. site that an aesthetic parameter was selected as displeasing. The number in parentheses under season and total indicates the number of surveys completed.

Aesthetic Parameter	Spring (N = 4)	Summer (N = 8)	Fall (N = 4)	Total (N = 16)
Materials (color,ordor, taste, or unsightliness)	75	63	25	56
Submerged Garbage (on the shoreline or bottom)	0	50	25	31
Shoreline Garbage (on the shoreline or bottom)	50	75	75	69
Animals (on the shoreline or bottom)	0	0	0	0
Dead Animals (on the shoreline or bottom)	0	13	25	13
Invasive Species (on the shoreline or bottom)	50	50	25	44
Other things unpleasant (on the shoreline or bottom)	25	0	0	6
Floating Garbage (in the water)	0	0	0	0
Floating Algae (in the water)	25	63	50	50
Other Floating Material (in the water)	25	13	0	13

Fox River-West Lazarre Avenue (shoreline garbage), 07/23/2012, Kaira Kamke

Fox River-West Lazarre Avenue Site, 05/31/2013, Julia Noordyk

Fox River-West Lazarre Avenue (Phragmites), 08/29/2013, Julia Noordyk

Fox River-Porlier Pier

A total of 9 aesthetics surveys were completed at the Fox River-Porlier Pier site from 2011-2013. The mean impression rank was 2.6; however, 4 surveys were ranked as somewhat displeasing and 2 as very displeasing (Figure 10). Assessment scores ranged from 0 to 4 and the mean assessment score was 2.1 (Figure 11). Despite the low assessment scores, there were several aesthetic parameters that were selected as displeasing in many surveys. Shoreline garbage and floating algae were selected in 56% of surveys, but peaks occurred in the summer when they were selected in 100% of surveys (Table 5). Food related and street litter was selected as items for shoreline garbage while floating algae was described as green soupy. Displeasing materials and submerged garbage were selected in 33% of total surveys, but some seasonal trends occurred. Aesthetic parameters that were not selected as displeasing in any surveys included dead animals, invasive species, and other things unpleasant (Table 5).

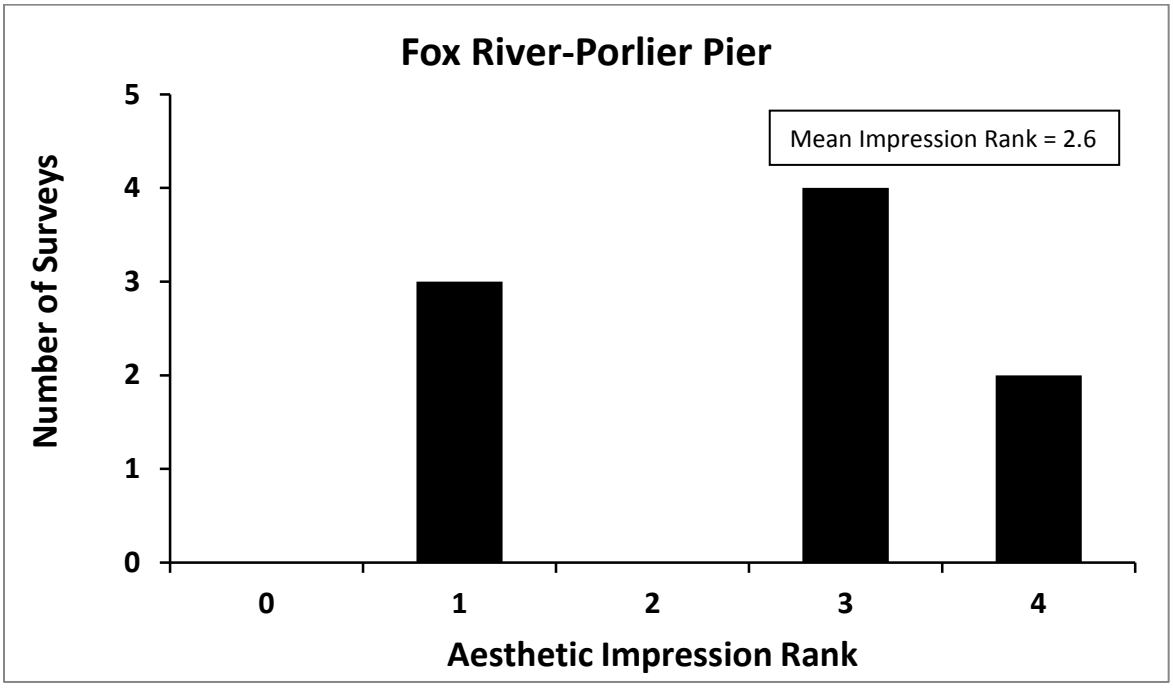


Figure 10. Aesthetic impression rank and number of surveys for the 2011-2013 aesthetics monitoring surveys at the Fox River-Porlier Pier.

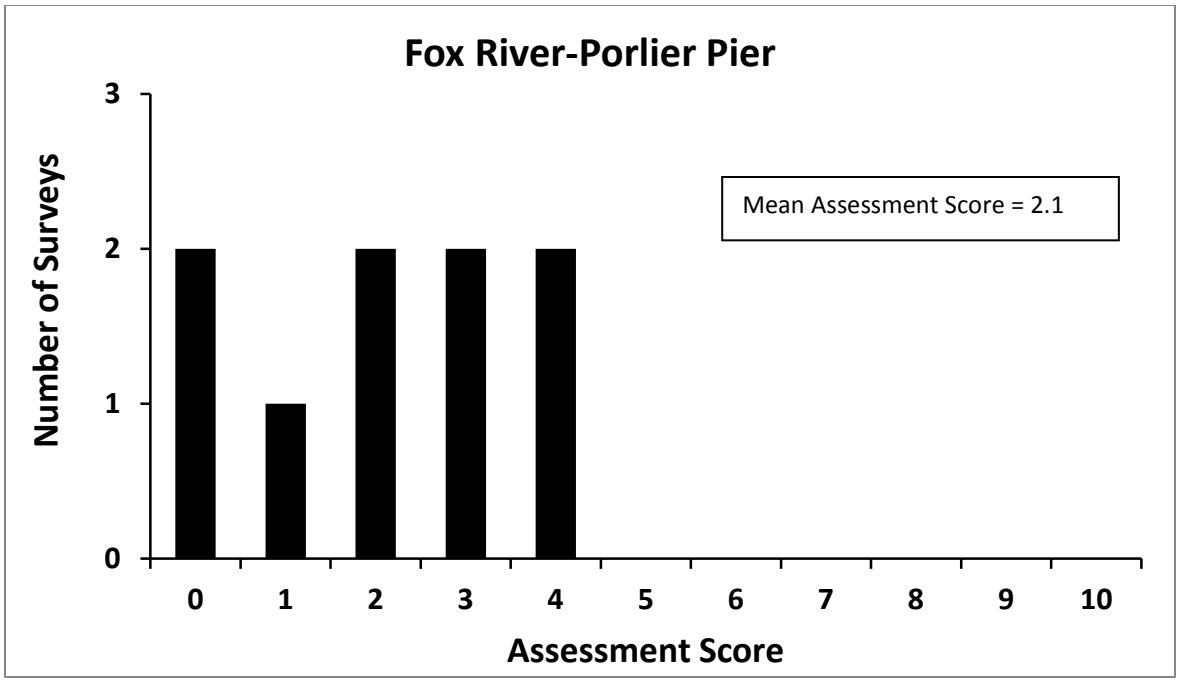


Figure 11. Aesthetic impression rank and number of surveys for the 2011-2013 aesthetics monitoring surveys at the Fox River-Porlier Pier.

Table 5. Percent (%) of surveys for the Fox River-Porlier Pier site that an aesthetic parameter was selected as displeasing. The number in parentheses under season and total indicates the number of surveys completed.

Aesthetic Parameter	Spring (N = 2)	Summer (N = 3)	Fall (N = 4)	Total (N = 9)
Materials (color,ordor, taste, or unsightliness)	0	67	25	33
Submerged Garbage (on the shoreline or bottom)	0	33	50	33
Shoreline Garbage (on the shoreline or bottom)	0	100	50	56
Animals (on the shoreline or bottom)	0	0	25	11
Dead Animals (on the shoreline or bottom)	0	0	0	0
Invasive Species (on the shoreline or bottom)	0	0	0	0
Other things unpleasant (on the shoreline or bottom)	0	0	0	0
Floating Garbage (in the water)	0	33	0	11
Floating Algae (in the water)	0	100	50	56
Other Floating Material (in the water)	0	33	0	11

Fox River-Porlier Park Canoe Launch, 08/30/2012, Nic Sparacio

Fox River-Porlier Park (floating algae), 08/30/2012, Nic Sparacio

Fox River-Porlier Park (shoreline garbage), 11/19/2011, Jacob Jung

Fox River-Leicht Park

In 2011-2013, there were 11 aesthetics surveys completed at Fox River-Leicht Park. The mean impression rank was 1.5 and somewhat pleasing was selected the most (6 surveys; Figure 12). Assessment scores ranged from 1 to 4 and the mean assessment score was 2.6 (Figure 13). Floating algae predominately in the form of green soupy was noted displeasing in 91% of total surveys (Table 6). In the spring and summer floating algae was selected in 100% of surveys and 83% in fall. Displeasing materials including algae and goose droppings were selected in 75% of surveys during the summer and 50% in fall. Similarly, shoreline garbage was selected in 50% of surveys during the summer and fall. Displeasing factors due to animals was selected in 50% of surveys during the summer due to goose droppings. All other aesthetic parameters were selected in less than 19% of surveys (Table 6).

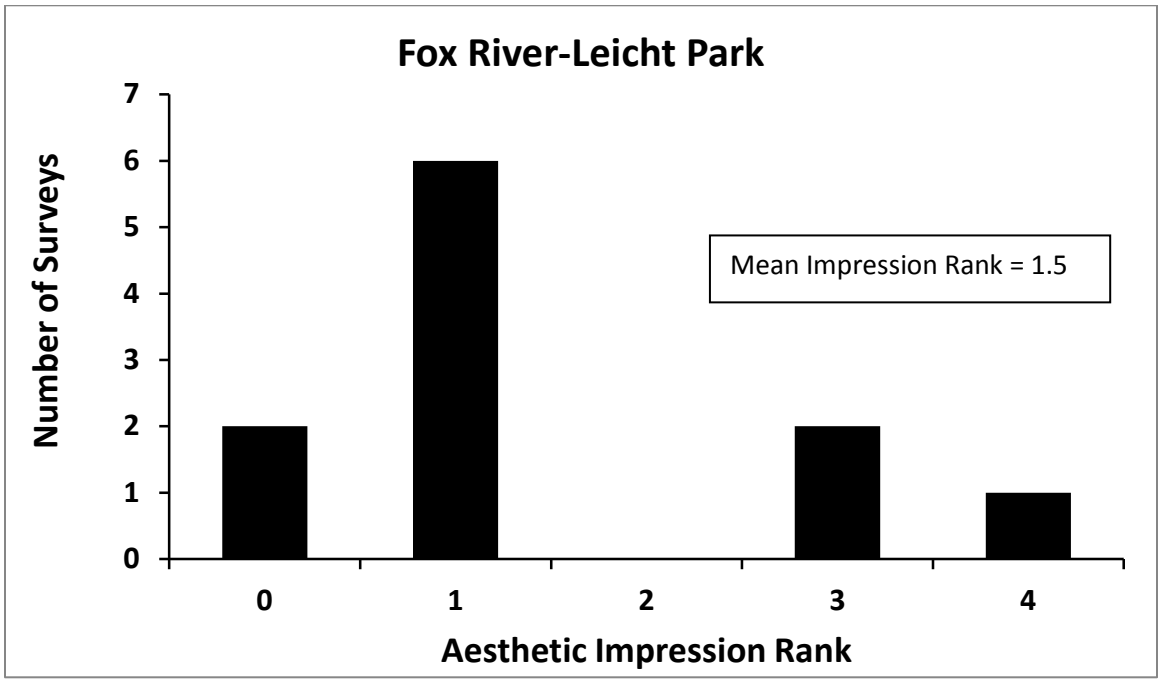


Figure 12. Aesthetic impression rank and number of surveys for the 2011-2013 aesthetics monitoring surveys at the Fox River-Leicht Park.

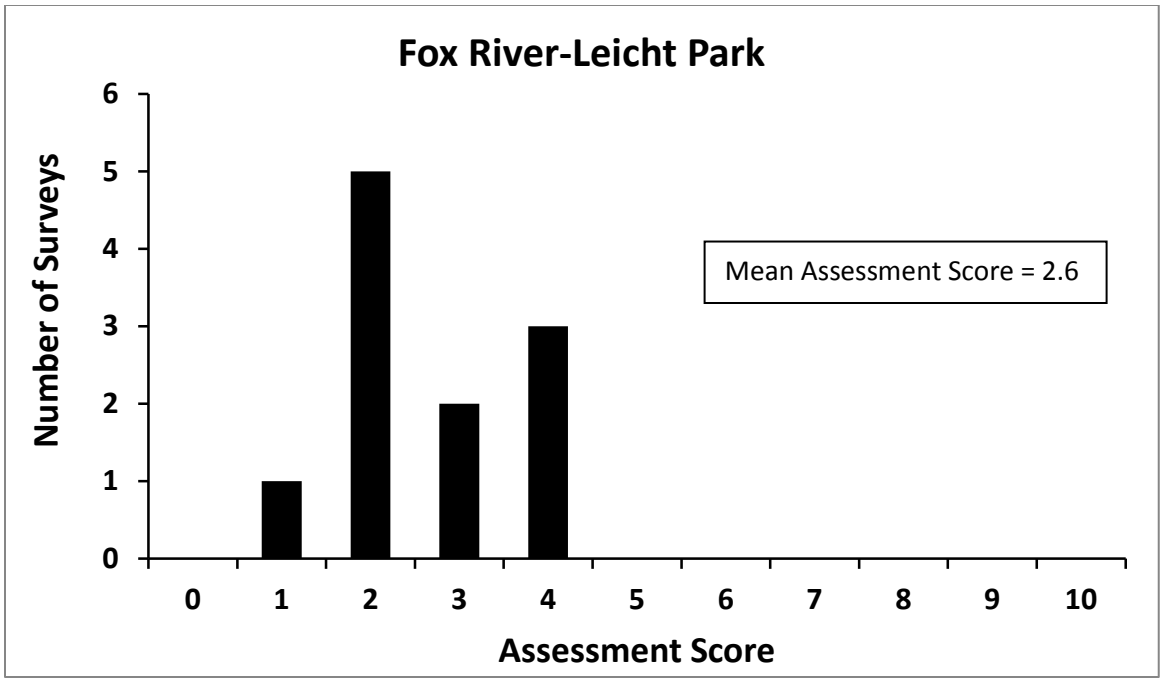


Figure 13. Aesthetic impression rank and number of surveys for the 2011-2013 aesthetics monitoring surveys at the Fox River-Leicht Park.

Table 6. Percent (%) of surveys for the Fox River-Leicht Park site that an aesthetic parameter was selected as displeasing. The number in parentheses under season and total indicates the number of surveys completed.

Aesthetic Parameter	Spring (N = 1)	Summer (N = 4)	Fall (N = 6)	Total (N = 11)
Materials (color,ordor, taste, or unsightliness)	0	75	50	55
Submerged Garbage (on the shoreline or bottom)	100	0	0	9
Shoreline Garbage (on the shoreline or bottom)	0	50	50	45
Animals (on the shoreline or bottom)	0	50	17	27
Dead Animals (on the shoreline or bottom)	0	25	0	9
Invasive Species (on the shoreline or bottom)	0	0	0	0
Other things unpleasant (on the shoreline or bottom)	0	0	0	0
Floating Garbage (in the water)	0	25	17	18
Floating Algae (in the water)	100	100	83	91
Other Floating Material (in the water)	0	0	17	9

Fox River-Leicht Park, 10/06/2011, Ben Heiman

Fox River-Leicht Park (floating algae), 07/29/2012, Stefanie Stainton

Fox River-Leicht Park (shoreline and submerged garbage), 06/01/2013, Faye VanBeckum

Fox River-Riverview Place Park

The Fox River-Riverview Place Park had 9 aesthetics surveys completed from 2011-2013. The mean impression rank was 3.8 and 7 of 9 surveys ranked the site as very displeasing (Figure 14). Assessment scores ranged from 5 to 8 and the mean assessment score was 6.5 (Figure 15). Several aesthetic parameters were selected as displeasing in all surveys including materials, submerged garbage, shoreline garbage, and invasive species (Table 7). Several materials were listed as displeasing, but garbage and algae were listed most frequently. Common submerged garbage items included street litter, food related litter, household materials, computers, drums, and fence posts. Shoreline garbage items included street litter, food and fishing related litter, household waste and building materials. Phragmites was noted as a dominant invasive species that contributed to the site being displeasing. Floating algae largely in the form of green soupy was selected as displeasing in 89% of surveys, with 100% of summer surveys noting it as displeasing. Dead animals, floating garbage, and other things unpleasant were selected as displeasing in 33% of surveys. The only aesthetic parameter that was not selected in any surveys was displeasing factors caused by animals (Table 7).

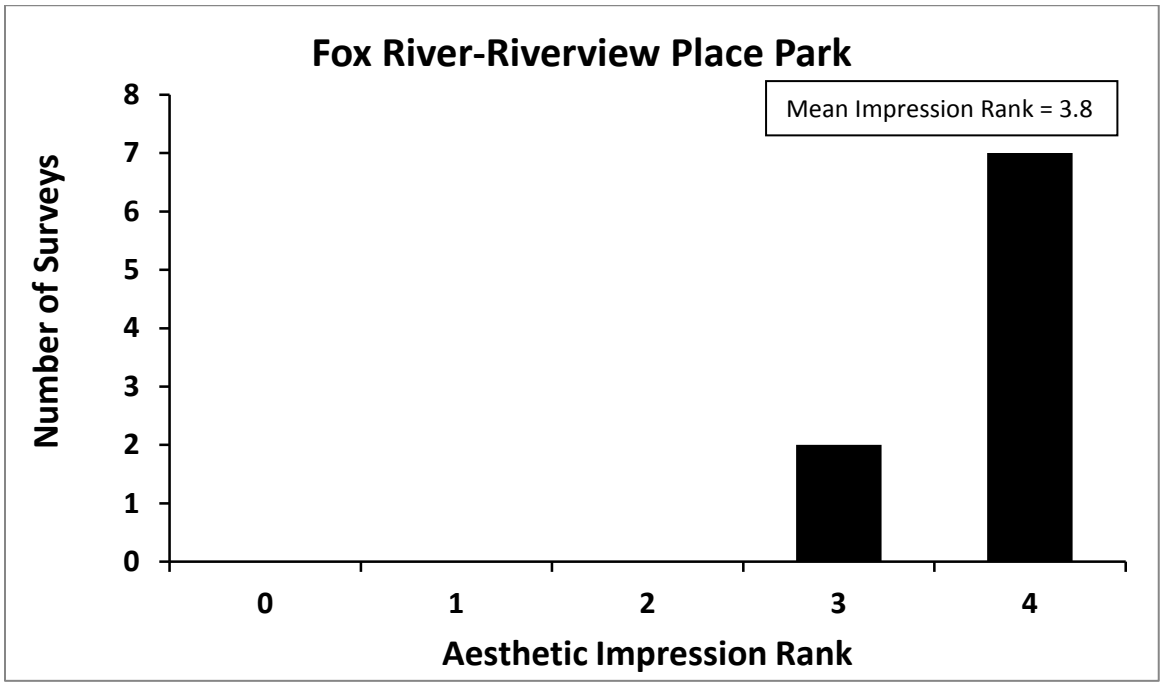


Figure 14. Aesthetic impression rank and number of surveys for the 2011-2013 aesthetics monitoring surveys at the Fox River-Riverview Place Park.

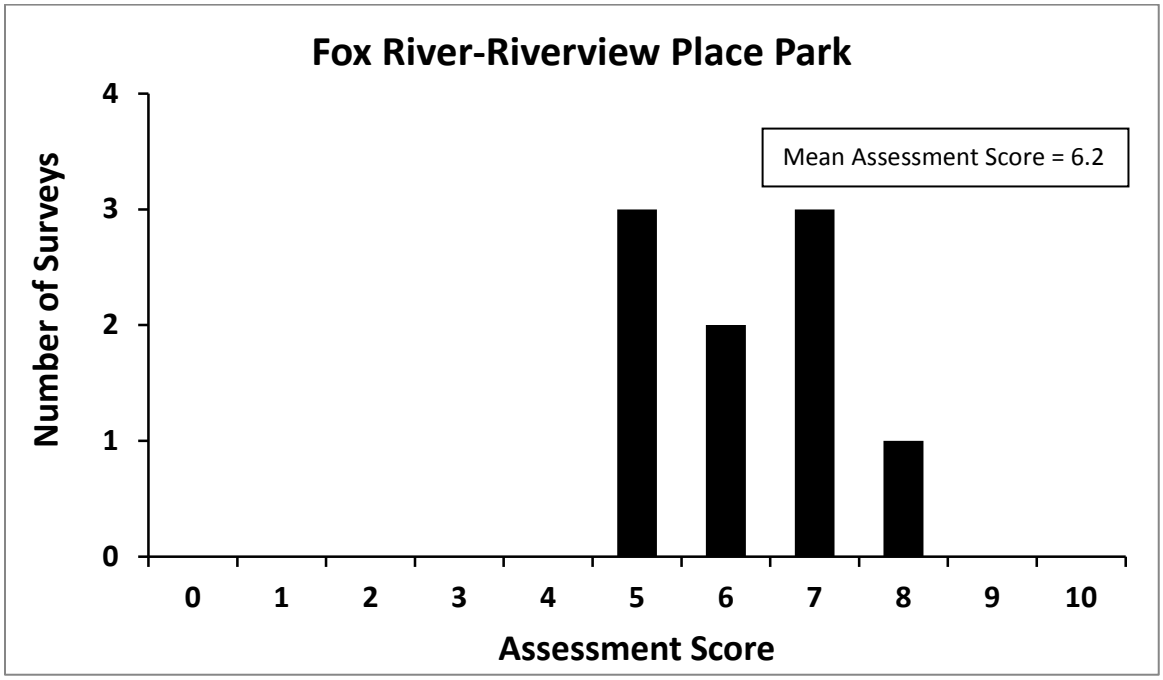


Figure 15. Aesthetic impression rank and number of surveys for the 2011-2013 aesthetics monitoring surveys at the Fox River-Riverview Place Park.

Table 7. Percent (%) of surveys for the Fox River-Riverview Place Park site that an aesthetic parameter was selected as displeasing. The number in parentheses under season and total indicates the number of surveys completed.

Aesthetic Parameter	Spring (N = 1)	Summer (N = 3)	Fall (N = 5)	Total (N = 9)
Materials (color,ordor, taste, or unsightliness)	100	100	100	100
Submerged Garbage (on the shoreline or bottom)	100	100	100	100
Shoreline Garbage (on the shoreline or bottom)	100	100	100	100
Animals (on the shoreline or bottom)	0	0	0	0
Dead Animals (on the shoreline or bottom)	100	33	20	33
Invasive Species (on the shoreline or bottom)	100	100	100	100
Other things unpleasant (on the shoreline or bottom)	0	67	20	33
Floating Garbage (in the water)	100	33	20	33
Floating Algae (in the water)	100	100	80	89
Other Floating Material (in the water)	0	33	20	22

Fox River-Riverview Place Park (Phragmites), 08/27/2012, Cheryl Bougie

Fox River-Riverview Place Park (shoreline garbage), 08/30/2012, Nic Sparacio

Fox River-Riverview Place Park (floating algae), 09/24/2012, Cheryl Bougie

Fox River-Metro Boat Landing

There were 14 aesthetics surveys completed at the Fox River-Metro Boat Landing in 2011-2013; however, the site did not meet the analysis criteria of having at least 3 different volunteers during at least 2 seasons. Analysis of the site was still conducted to utilize survey results and provide guidance on current site condition. The mean impression rank was 1.7 and no surveys were ranked greater than 3 (Figure 16). The assessment scores ranged from 0 to 4 and the mean assessment score was 1.5 (Figure 17). There were 6 surveys that received an assessment score of 0. Shoreline garbage was most frequently selected as displeasing; that was noted in 36% of total surveys, but during the summer it was selected in 75% of surveys (Table 8). Items selected as displeasing included street litter and food related litter. Displeasing factors caused by materials and animals was selected in 29% of total surveys and all other aesthetic parameters were selected in less than 22% of surveys (Table 8).

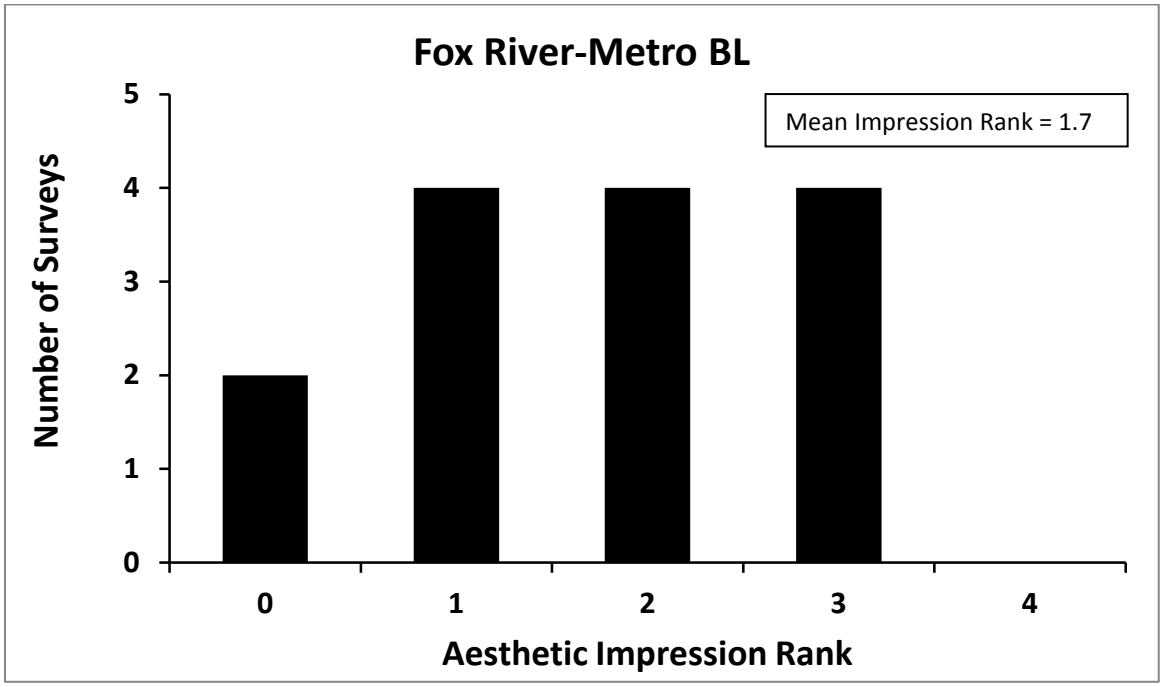


Figure 16. Aesthetic impression rank and number of surveys for the 2011-2013 aesthetics monitoring surveys at the Fox River-Metro Boat Landing.

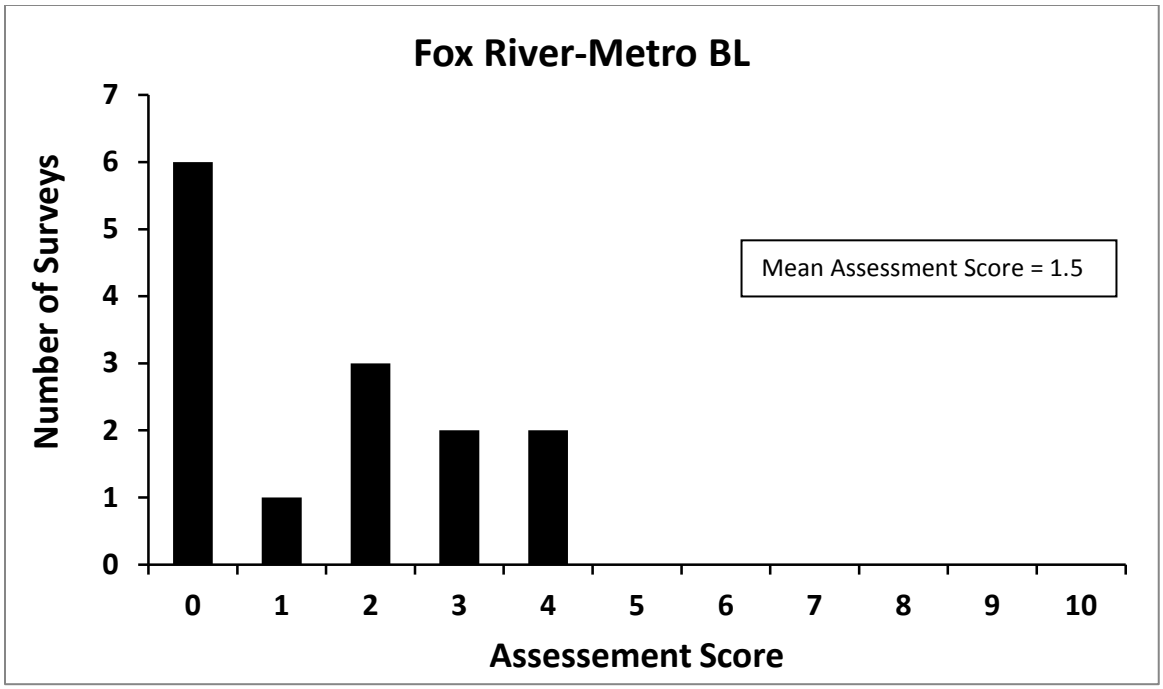


Figure 17. Aesthetic impression rank and number of surveys for the 2011-2013 aesthetics monitoring surveys at the Fox River-Metro Boat Landing.

Table 8. Percent (%) of surveys for the Fox River-Metro Boat Landing site that an aesthetic parameter was selected as displeasing. The number in parentheses under season and total indicates the number of surveys completed.

Aesthetic Parameter	Spring (N = 3)	Summer (N = 4)	Fall (N = 7)	Total (N = 14)
Materials (color, odor, taste, or unsightliness)	0	50	29	29
Submerged Garbage (on the shoreline or bottom)	0	0	0	0
Shoreline Garbage (on the shoreline or bottom)	0	75	29	36
Animals (on the shoreline or bottom)	0	25	43	29
Dead Animals (on the shoreline or bottom)	0	50	0	14
Invasive Species (on the shoreline or bottom)	0	25	0	7
Other things unpleasant (on the shoreline or bottom)	0	25	0	7
Floating Garbage (in the water)	0	25	0	7
Floating Algae (in the water)	0	25	29	21
Other Floating Material (in the water)	0	0	0	0

Fox River-Metro Boat Landing (pier view), 11/07/2011, Nicole Van Helden

Fox River-Metro Boat Landing (boat dock view), 11/19/2011, Jacob Jung

Fox River-Metro Boat Landing (power plant in the distance), 09/01/2012, Kathy Lefabvre

Lake Michigan-Bay Beach

Lake Michigan Bay Beach had a total of 9 aesthetics surveys completed from 2011-2013. The impression ranks ranged from 1 to 4 and the mean was 2.6 (Figure 18). Assessment scores ranged from 2 to 7 and the mean assessment score was 4.1 (Figure 19). Several aesthetic parameters were chosen as aesthetically displeasing including materials and invasive species that were selected in 100% of total surveys (Table 9). Phragmites was noted as a dominant invasive species at the site that blocked the ability to use the site. Shoreline garbage was selected as displeasing in 89% of total surveys with street litter and food related litter items frequently found at the site. Other things unpleasant at the site were selected in 56% of surveys with weeds, grasses, and cottonwood trees noted as displeasing factors. No other aesthetic parameters were selected as aesthetically displeasing in greater than 22% of total surveys and submerged garbage, displeasing animals, and floating garbage were not selected as displeasing in any surveys (Table 9).

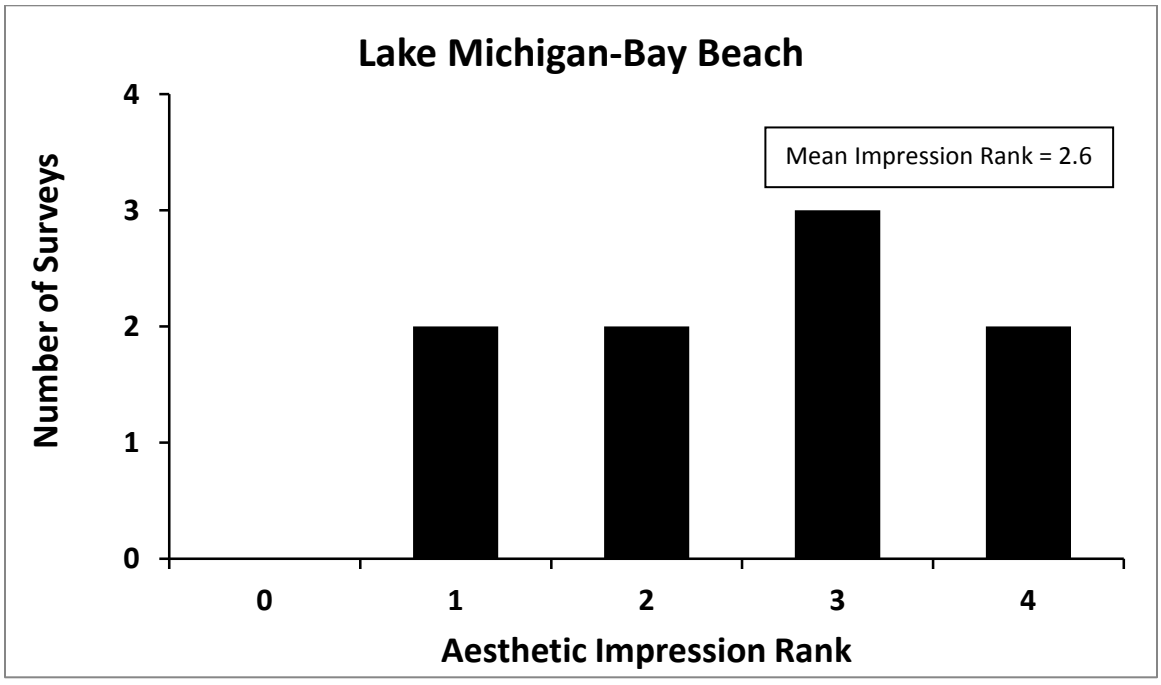


Figure 18. Aesthetic impression rank and number of surveys for the 2011-2013 aesthetics monitoring surveys at the Lake Michigan-Bay Beach.

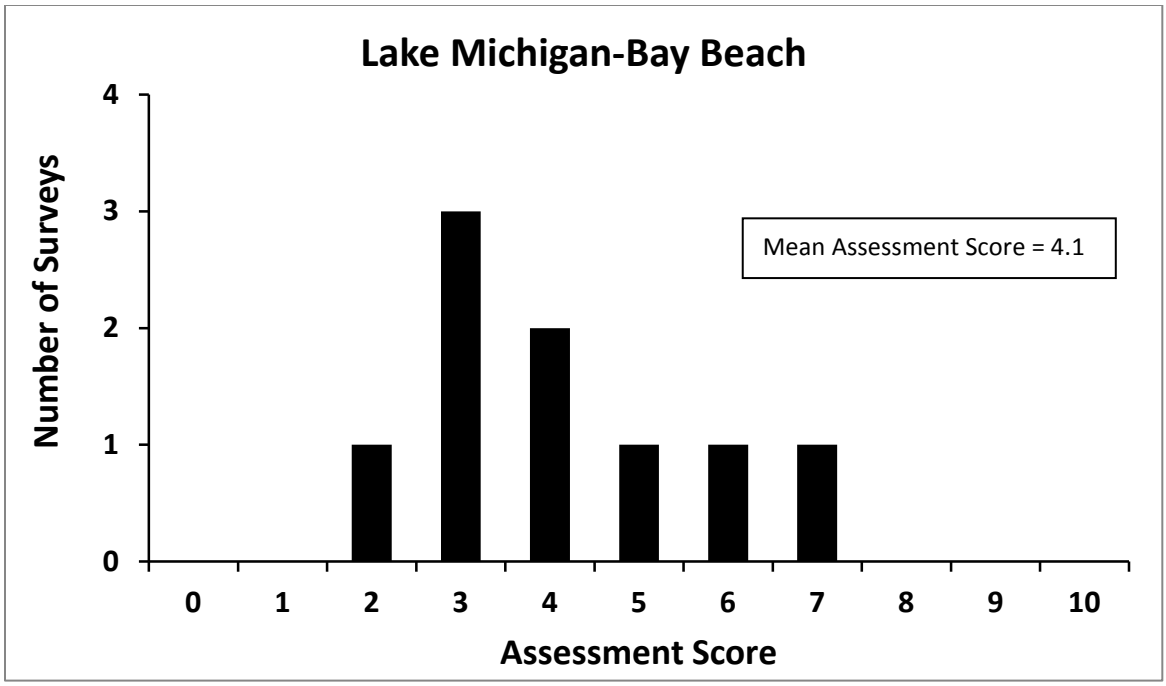


Figure 19. Aesthetic impression rank and number of surveys for the 2011-2013 aesthetics monitoring surveys at the Lake Michigan-Bay Beach.

Table 9. Percent (%) of surveys for the Lake Michigan-Bay Beach site that an aesthetic parameter was selected as displeasing. The number in parentheses under season and total indicates the number of surveys completed.

Aesthetic Parameter	Spring (N = 2)	Summer (N = 3)	Fall (N = 4)	Total (N = 9)
Materials (color,ordor, taste, or unsightliness)	100	100	100	100
Submerged Garbage (on the shoreline or bottom)	0	0	0	0
Shoreline Garbage (on the shoreline or bottom)	100	100	75	89
Animals (on the shoreline or bottom)	0	0	0	0
Dead Animals (on the shoreline or bottom)	0	67	0	22
Invasive Species (on the shoreline or bottom)	100	100	100	100
Other things unpleasant (on the shoreline or bottom)	100	75	25	56
Floating Garbage (in the water)	0	0	0	0
Floating Algae (in the water)	50	33	0	22
Other Floating Material (in the water)	50	33	0	22

Lake Michigan-Bay Beach (mud flats), 08/30/2012, Nic Sparacio

Lake Michigan-Bay Beach (rip rap), 09/01/2012, Kathy Lefabvre

Lake Michigan-Bay Beach (Phragmites), 09/01/2012, Kathy Lefabvre

Lake Michigan-Communiversity Park

There were 7 aesthetics surveys completed at Lake Michigan-Communiversity Park in 2011-2013; however, the site did not meet the analysis criteria of having at least 3 different volunteers during at least 2 seasons. Analysis of the site was still conducted to utilize survey results and provide guidance on current site condition. The aesthetic impression rank scores were low with a rank of 0 in 3 surveys and a rank of 1 in 4 surveys (Figure 20). The mean impression rank was 0.6 falling between very pleasing and somewhat pleasing. Mean assessment scores were also low with a mean of 1.1 (Figure 21). There were only 3 aesthetic parameters that were selected as displeasing in surveys (Table 10). Invasive species in the form of Phragmites and zebra mussels was selected in 71% of total surveys. Floating algae was only selected in 29% of total surveys, but in the summer it was selected on both surveys completed. Lastly, displeasing factors caused by animals was selected in 14% of total surveys and no other parameters were selected as displeasing in the surveys (Table 10).

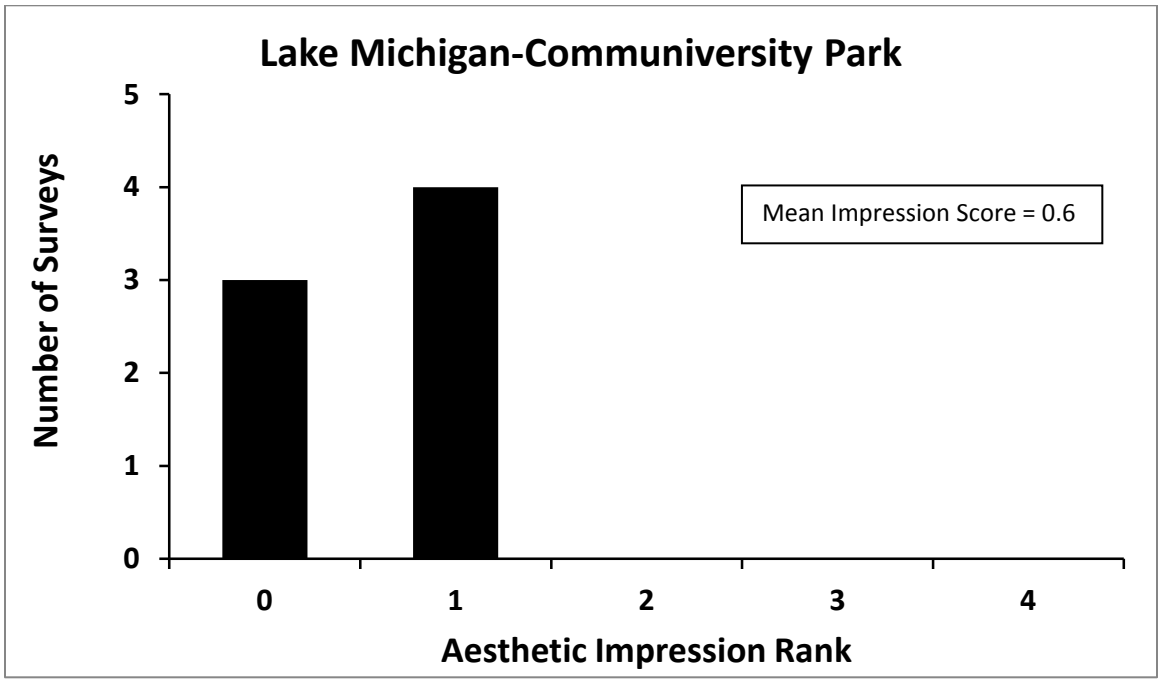


Figure 20. Aesthetic impression rank and number of surveys for the 2011-2013 aesthetics monitoring surveys at the Lake Michigan-Communiversity Park.

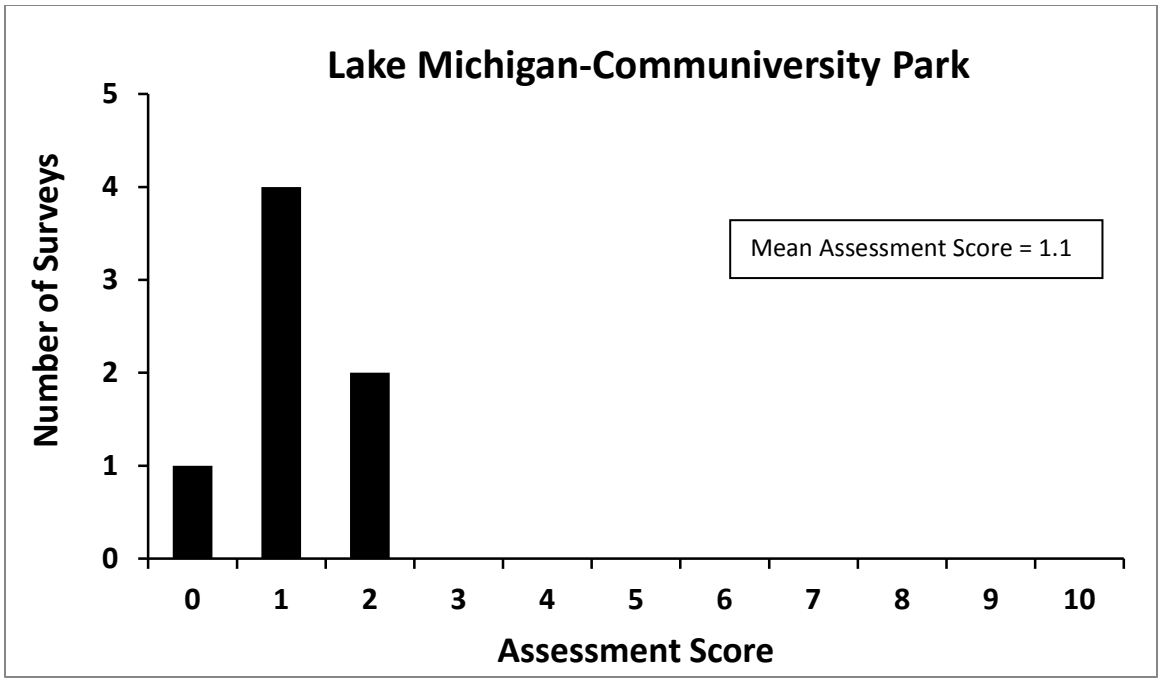


Figure 21. Aesthetic impression rank and number of surveys for the 2011-2013 aesthetics monitoring surveys at the Lake Michigan-Communiversity Park.

Table 10. Percent (%) of surveys for the Lake Michigan-Communiversity site that an aesthetic parameter was selected as displeasing. The number in parentheses under season and total indicates the number of surveys completed.

Aesthetic Parameter	Spring (N = 2)	Summer (N = 2)	Fall (N = 3)	Total (N = 7)
Materials (color,ordor, taste, or unsightliness)	0	0	0	0
Submerged Garbage (on the shoreline or bottom)	0	0	0	0
Shoreline Garbage (on the shoreline or bottom)	0	0	0	0
Animals (on the shoreline or bottom)	0	0	33	14
Dead Animals (on the shoreline or bottom)	0	0	0	0
Invasive Species (on the shoreline or bottom)	50	50	100	71
Other things unpleasant (on the shoreline or bottom)	0	0	0	0
Floating Garbage (in the water)	0	0	0	0
Floating Algae (in the water)	0	100	0	29
Other Floating Material (in the water)	0	0	0	0

Lake Michigan-Communiversity Park, 06/01/2013, Faye VanBeckum

Lake Michigan-Communiversity Park (shoreline attached algae), 06/01/2013, Faye VanBeckum

Lake Michigan-Communiversity Park (floating algae), 06/01/2013, Faye VanBeckum

Citizen Surveys

Although we set an initial goal of 450 surveys, the actual total was much less, at 117 (see table below). One reason for this is that the student spent only 70 hours surveying out of the budgeted 200. This was partly due to his availability (he set his own hours) and partly due to the season being shorter than planned. The budget was set up with a sampling season of April through October, but he was not actually hired until late June, and he stopped surveying in early October, due to a sharp drop off in new (not already contacted) park/launch users after Labor Day.

Survey Location	*Number of Surveys*
Wietor Wharf	8
Fox Point Launch	16
Leicht Park	11
Metro Boat Launch	28
Perkofski Boat Launch	2
Porlier Pier	3
Riverview Place Park	3
Voyageur Park	28
West Lazarre Avenue	13
Communiversity Park	5

Numbers of visitors/users differed quite a bit between sites. Some sites—such as Voyageur Park and the Metro Boat Launch—were relatively popular, while others—such as Riverview Place Park—were not visited much. The student did not actually encounter anyone using Riverview Place Park while he was there, so the three surveys for that site were ones that he filled out himself. Also, at some sites—such as Bay Beach, West Lazarre Avenue, and Porlier Pier—there were often people in the area, but not necessarily down near the water. So, if he approached them for surveys, he made it clear that the survey questions were focused on the water and shoreline.

Survey results showed that the citizens surveyed found almost all of the sites to be aesthetically pleasing. For the overall aesthetic impression rating (Question #2), all respondents answered “very pleasing” or “somewhat pleasing,” except for one “very

displeasing" rating at Voyageur Park and "very displeasing" ratings for all three of the surveys at Riverview Place Park. As noted above, the surveyor did not encounter anyone else at the Riverview Place site, so he filled out the surveys himself. Reasons noted for the "very displeasing" impression were trash on the shore and in the water, a muddy parking area, and a generally unkept appearance. The reason given for the "very displeasing" rating at Voyageur Park was dredging in the river, which is a temporary inconvenience and beneficial in the long-term (contaminated sediment cleanup). On the other hand, folks listed a variety of factors that made the sites pleasing to them, such as a nice view, easy access, good fishing, and well-maintained trails and facilities.

Responses to Question #3 about whether there were materials present in or on the water or on the shore producing color, odor, or unsightliness to the extent that they made the area unpleasant or blocked access to the water revealed a slightly different story. When asked this more specific question, some people replied "Yes" even though they had rated the site as "very pleasing" or "somewhat pleasing" overall. The "Yes" answers were still less common than the "No" answers, except for the Riverview Place Park and Perkofski Boat Launch sites. At both of these sites, all those surveyed answered "Yes" to this question. At Riverview Place Park the problem listed was trash along the shore and in the water. At Perkofski Boat Launch the problem was the green color of the water. Interestingly, 16 people answered "No" to the first part of this question but then answered the second part ("If yes, please describe.") This was most likely due to the SWIMS question not lining up well with the actual survey question. It starts off with "List the other things that made the area unpleasant." So, if the surveyor was reading the question from SWIMS, respondents might think they should answer it even if they said "No" for the first part. Including both "Yes" and "No" answers, green or brown water, garbage, and algae were the most common answers given for the second part of this question. Other responses listed on more than one survey were poor water clarity, bird droppings, and noise.

The majority of respondents said for Question #4 referring to change in overall appearance over time that they had not noticed a change. A couple of sites were notable for

the number of people who had noticed an improvement. At Voyageur Park, 9 people out of a total of 28 surveyed said that they had noticed an improvement over time, while 14 said they had not noticed a change and 5 did not know. The most common reason given for the improvement was a decrease in garbage or trash in the area. At Metro Boat Launch, 6 people out of a total of 28 surveyed said that they had noticed an improvement over time, while 13 said they had not noticed a change, 1 noticed a change for the worse, and 8 did not know. The most common reason given for the improvement was an increase in water clarity. On the other hand, the one respondent that noticed the appearance getting worse over time noted a decrease in water clarity.

CONCLUSIONS AND RECOMMENDATIONS

Volunteer Monitoring

The Fox River-Riverview Place Park location was the only site to meet all three of the action criteria. The mean impression score was 3.8 while the mean assessment score was 6.2. There were 4 aesthetic parameters chosen as displeasing in 100% of surveys included displeasing materials, submerged and shoreline garbage, and invasive species. Floating algae was also selected as displeasing in 89% of surveys. No other sites met the action criteria of a mean impression rank of $\geq$ 3 or mean assessment score greater than $\geq$ 5. However, there were sites that had aesthetic parameters selected in $\geq$ 75% of the total completed surveys. The Fox River-Leicht Park had floating algae selected in 91% of surveys. Lake Michigan-Bay Beach had displeasing materials and invasive species selected in 100% if surveys as well as shoreline garbage selected in 89% of surveys. Other than the three sites described above no other sites met any of the three action criteria.

Therefore, the Fox River-Riverview Place Park, Fox River-Leicht Park, and Lake Michigan-Bay Beach are good candidates for remedial action to occur. Remedial action at Fox River-Riverview Place Park and Lake Michigan-Bay Beach could include the coordination of volunteer and public clean up events that would focus on garbage clean up. Specific items to target would include for cleanup street litter, food related litter, household materials, fishing related liter, computers, drums, and other items that are found. Floating algae was also noted as an

aesthetically displeasing problem needing more attention at the Fox River-Riverview Place Park and Fox River-Leicht Park. The algae issue is caused by the larger problem of excessive nutrients, and phosphorus in particular, being discharged upstream in the watershed. No actions are planned for these particular sites, since this is a watershed problem. The Lower Fox River and tributaries are impaired for total phosphorus and total suspended solids, and a Total Maximum Daily Load (TMDL) has been approved for the Lower Fox River Basin. The Fox River-Riverview Place Park and Lake Michigan-Bay Beach surveys also indicated an abundant amount of Phragmites that degraded the aesthetics of the site. Targeted invasive species management may be a potential option to control invasive species such as Phragmites at severely invaded sites.

In order to continue to identify problem sites, develop remedial action options, and assess the potential for removal of the degraded aesthetics BUI, additional aesthetic monitoring needs to be completed. The current monitoring program is providing useful information, and we believe it should continue in a similar form. The program is still developing, with volunteer feedback and results being used to help shape it. The 2014 citizen monitoring season should strive to meet the goal of at least three volunteers visiting each station during at least 2 different monitoring seasons, especially those sites that did not meet the requirements in 2011-2013. In order to meet this goal, additional volunteers may need to be recruited to ensure that there are enough volunteers throughout the monitoring season. Quality control should also continue to be a focus and one training event should be scheduled at the beginning of the year for all volunteers (including those from previous years) to attend. Volunteers who are unable to attend should go through a training session with the AOC Coordinator before completing surveys. The AOC Coordinator should continue to consult with the volunteers and others on how the program can be improved. Meeting these goals will continue to lead to the successful implementation of the aesthetics citizen monitoring program and provide useful recommendations for the removal of the aesthetics BUI.

Citizen Surveys

The 2013 citizen survey project was an initial trial in the use of short citizen surveys to gather input on the users' impressions of the survey sites being studied by the volunteer monitoring program. Although the number of surveys was small, especially for a few of the less-visited sites, the results do provide some insight about the users of the sites and their opinions on what makes each site more or less pleasing to them. In general, the citizens surveyed rated the sites as more pleasing than the volunteer monitors did, which makes some sense since these were folks using the sites for their own recreation and enjoyment, and would likely not visit sites that they did not find pleasing (at least more than once). This is probably a reason why the surveyor did not find anyone at the Riverview Place Park site.

The main advantage of this survey method is that the survey is short and relatively simple to administer, so it allows us to gather opinions from more people. Like the volunteer monitoring program, it also helps focus people's attention on our local AOC waterways, asking them to think about what they like and dislike, and what they would like to see changed. The people being surveyed are those actually using the site, rather than trained observers who might otherwise never visit the site. This might be seen as either an advantage or a disadvantage, depending on whether one's focus is the current users of the sites ("average citizens") or trained volunteers who evaluate the sites by standard criteria. In both cases, the subject matter is subjective and two people can have very different evaluations of the same site on the same date. This is why it is so important to get a variety of opinions, and why we feel that a survey of this sort should be repeated to provide data supplemental to that being collected by the dedicated volunteers.

Perhaps in 2015, another surveyor should be hired to visit the same sites, starting earlier in the season and gathering more surveys. There should be a focus on asking the questions in the same order and using the same words as the original paper survey, in case quoting the SWIMS questions caused some confusion in the 2013 surveys. Also, the surveyor should receive some guidance on how often and for how long he or she should visit the various sites, to make tracking and comparison of sites easier. The approach will depend on whether it is

deemed more important to gather more surveys overall, by focusing on the most-used sites, or to gather a minimum number of surveys per site.

Overall, we should continue to ask questions, refine our methods, and consider other ways of gathering aesthetics-related data and expanding the number of citizens included in the assessment. One possibility for expanding the program is that surveys could be completed by smart phone, such as through the pilot Wisconsin Sea Grant spatial narratives project. Another option that's been discussed is to use an event, either one already occurring in the AOC or one planned specifically for this program, to gather input from a lot of people on the same day.

REFERENCES

WDNR. 2009. Lower Green Bay and Fox River Area of Concern Delisting Targets. 29 pp. Accessed online 02/27/2014 at http://dnr.wi.gov/topic/greatlakes/documents/LowerGreenBayFinalReport.pdf

APPENDIX A.

Volunteer Aesthetics Monitoring Program Survey Forms

for 2012 and 2013 with Scoring

Green Bay Volunteer Aesthetics Monitoring

MONITORING DATA SHEET

Station ID number: _____ (Obtain Station Name and ID # from Program Staff. Please use one data sheet for each station.)

Station Name/Location: _____

SWIMS Data Entered By: Name: _____ Email:_____@_____

If possible, please enter your site's monitoring data in SWIMS each month. **SWIMS Website:** http://prodoasjava.dnr.wi.gov/swims

Describe conditions at site during this particular visit				
1. Monitoring Date: (include year)				
2. Start Time:				
3. Data Collector:				
4. Describe water conditions:	Flat/Calm	Slight Movement	Moderate Flow/waves	Rough/Fast Flowing
5. Water Level:	Don't Know	High	Low	Normal
6. Did you take any pictures? Please describe.				
Overall aesthetic impression of the site				
7. Overall, do you find the site aesthetically pleasing? Please describe. List any factors that make it pleasing or not pleasing.	Very Pleasing (0)	Somewhat Pleasing (1)	Neutral (2)	Somewhat Displeasing (3)	Very Displeasing (4)
	Explain:				
8. Have you previously evaluated this station? Y/N	Yes		No		
9. If you have previously evalutated this station, have you noticed any changes in aesthetic quality of the water or along the shoreline since your last visit?					
Materials producing color, odor, or unsightliness				
10. Are any materials producing color, odor or unsightliness present to the extent that they make the area unpleasant or block your ability to access or use the water?	Yes (1)		No (0)	
	Please describe			
11. Water Color:	Clear (0)	Red Stained (1)	Green Stained (Pea Soup) (1)	Brown (Turbid) (1)
12. Odor of Water:	No Smell (0)	Fishy (1)	Sulfur/Rotting Eggs (1)	Musty/Wet Soil (1)
	Algae/Decaying Plants (1)		Chlorine (1)	Other (please describe)_____ (1)
13. Transparency Tube 1				cm
Transparency Tube 2				cm

Substances causing objectionable deposits on shore or in bed of River/Bay

14. Are any of the following present **on the shoreline or bottom of River/Bay** to the extent that they make the area unpleasant or block your ability to access or use the water?

A. Submerged garbage - Y/N	Yes (1)			No (0)	
If yes, list visible item(s): If unidentifiable, please indicate.					
B. Shoreline garbage - Y/N	Yes (1)			No (0)	
If yes, circle type(s):	Street Litter	Food-related Litter	Medical Items	Resin	Sewage-related Litter
	Building Materials	Fishing-related Litter		Household Waste	Other (please describe)_____
C. Animals (geese, gulls, etc) - Y/N	Yes (1)			No (0)	
If yes, list type(s) and reason for problem (droppings, aggressive, etc):					
D. Dead animals - Y/N	Yes (1)			No (0)	
If yes, list type and amount:					
E. Invasive species (Phragmites, zebra/quagga mussels, other) - Y/N	Yes (1)			No (0)	
If yes, list type(s):					
F. Other - Y/N	Yes (1)			No (0)	
	Please describe				

15. Please indicate if any of the following are present **in the water** to the extent that they make the area unpleasant or block your ability to access or use the water:

A. Floating Garbage - Y/N	Yes (1)			No (0)	
If yes, estimated percent of floating garbage on water surface: (see attached directions for estimation)					%
If yes, please list circle type(s):	Street Litter	Food-related Litter	Medical Items	Resin	Sewage-related Litter
	Building Materials	Fishing-related Litter		Household waste	Other (please describe)_____
B. Surface Water Description:	Normal	Oily Sheen		Neon Green Sheen	Foamy
	Floating Aquatic Plants		Natural Debris	Other (please describe)_____	
C. Algae - Y/N	Yes (1)			No (0)	
If yes, estimated percent of algae on water surface: (see attached directions for estimation)					%
If yes, please circle type(s):	Blobs of Floating Material			Green Soupy	Matted
	Attached to Rocks/Stringy			Other (please describe)_____	
If yes, please circle color:	Light Green		Blue Green		Dark Green
	Brown	Red	Yellow	Other (please describe)_____	
D. Other - Y/N	Yes (1)			No (0)	
	Please describe				

Survey END	
16. While filling out this survey, please describe the most difficult task (if any)	
17. Comments: Please include anything else you though should be reported while completing out this survey. (Please use back for additional comments)	
18. End Time:	
19. Date the data were entered in SWIMS:	
QA/QC: (for DNR use only)	

Green Bay AOC Volunteer Aesthetics Monitoring

MONITORING DATA SHEET

Station Name/Location: _____

Demographic information:

Sex: (please circle) **M** **F** **Age:** _____

What county do you live in?_____ **How many years have you lived in the county?**_____

Approximately how many times have you visited this location in the past 10 years? If this is your first visit enter 1. _____

Describe conditions at site during this particular visit ** Please fill out all questions on the datasheet completely and to the best of your ability.

1. Data Collector (Your Name):				
2. Monitoring Date (MM/DD/YY):				
3. Start Time (include AM/PM):				
4. Describe water conditions:	Flat/Calm	Slight Movement	Moderate Flow/waves	Rough/Fast Flowing
A. Water Level:	Don't Know	High	Low	Normal
5. Did you take any pictures? Please describe. please email pictures with location and date information to laurel.last@wisconsin.gov	Yes		No	

Overall aesthetic impression of the site

6. Overall, how aesthetically pleasing do you find the site? Please describe. List any factors that make it pleasing or not pleasing.	Very Pleasing (0)	Somewhat Pleasing (1)	Neutral; neither pleasing nor displeasing (2)	Somewhat Displeasing (3)	Very Displeasing (4)
	Explain:				

Color, Clarity, Odor, or Unsightliness

7. Are any **materials** detectable to you such that they produce color, odor, or unsightliness to the extent that they make the area unpleasant or block your ability to access, enjoy, or use the water?	**Yes (1)**	**No (0)**
	Please describe	
8. Are the characteristics **of the water** (Color, Clarity, Odor) presenting an unsightliness to the extent that they make the area unpleasant or block your ability to access, enjoy or use the water?	**Yes (1)**	**No (0)**
	Please describe	

9. Please describe the characteristics of the water during this particular visit. Characteristics may be present or absent regardless of their ability to make the area unpleasant or block your ability to access, enjoy, or use the water (Question 8).

A. Water Color:	Colorless Red Green Brown Other (please describe)_____
B. Water Clarity:	Completely Clear Fairly Clear Fairly Cloudy Completely Cloudy
(optional) Transparency Tube 1	**CM**
Transparency Tube 2	**CM**
C. Odor of Water:	No Smell Fishy Sulfur/Rotting Eggs Musty/Wet Soil
Choose all that apply	Algae/Decaying Plants Chlorine Other (please describe)_____
D. Water Surface:	Normal Oily Sheen Neon Green Sheen Foamy Floating Aquatic Plants
Choose all that apply	Natural Debris Natural Debris Jams Other (please describe)_____

Substances causing objectionable deposits on shore or on the bottom of river

10. Are any of the following visible to you **along the shoreline or on the bottom of the river** to the extent that they make the area unpleasant or block your ability to access, enjoy, or use the water?

A. Garbage on the bottom - Y/N	**Yes (1)** **No (0)**
If yes, list visible item(s): If unidentifiable, please indicate.	Street Litter Food-related Litter Medical Items Household Waste Sewage-related Litter Building Materials Fishing-related Litter Other (please describe)_____
B. Shoreline garbage - Y/N	**Yes (1)** **No (0)**
If yes, circle type(s):	Street Litter Food-related Litter Medical Items Household Waste Sewage-related Litter Building Materials Fishing-related Litter Other (please describe)_____
C. Algae - Y/N	**Yes (1)** **No (0)**
If yes, estimate percent of algae on shoreline or on the bottom: (see attached directions for estimation)	**%**
If yes, please circle type(s):	Blobs of Floating Material Green Soupy Matted Attached to Rocks/Stringy Other (please describe)_____
If yes, please circle color:	Light Green Blue Green Red Dark Green Brown Yellow Other (please describe)_____
D. Problem animals or problems caused by animals -Y/N	**Yes (1)** **No (0)**
If yes, list type(s) and reason for problem(s):	
E. Dead animals - Y/N	**Yes (1)** **No (0)**
If yes, list type and amount:	
F. Invasive species (e.g., Phragmites, zebra/quagga mussels, other) - Y/N	**Yes (1)** **No (0)**
If yes, list type(s):	
G. Other (shoreline or on the bottom) - Y/N	**Yes (1)** **No (0)** Please describe

Substances causing objectionable deposits floating or suspended in the water	
11. Are any of the following visible to you **floating or suspended in the water** to the extent that they make the area unpleasant or block your ability to access, enjoy, or use the water?	
A. Garbage - Y/N	**Yes (1)** **No (0)**
If yes, estimate percent of garbage floating or suspended in the water: (see attached directions for estimation)	**%**
If yes, please list circle type(s):	Street Litter; Food-related Litter; Medical Items; Household waste; Sewage-related Litter; Building Materials; Fishing-related Litter; Other (please describe)_____
B. Algae - Y/N	**Yes (1)** **No (0)**
If yes, estimate percent of algae floating or suspended in the water: (see attached directions for estimation)	**%**
If yes, please circle type(s):	Blobs of Floating Material; Green Soupy; Matted; Attached to Rocks/Stringy; Other (please describe)_____
If yes, please circle color:	Light Green; Red; Blue Green; Dark Green; Brown; Yellow; Other (please describe)_____
C. Other (floating or suspended in the water) - Y/N	**Yes (1)** **No (0)** Please describe
Survey END	
12. Have you previously evaluated this station? Y/N	Yes No
13. If you have previously evaluated this station, what changes if any have you noticed in the aesthetic quality of the water or along the shoreline since your last visit?	
14. While filling out this survey, please describe the most difficult task (if any).	
15. Comments: Please include anything else you thought should be reported while completing out this survey. (Please use back for additional comments)	
16. End Time:	
Date the data were entered in SWIMS: (include data entered by)	
QA/QC: (for DNR use only)	

If you have questions or to return this survey, please contact Laurel Last (Laurel.last@Wisconsin.gov) at WI DNR, 2984 Shawano Avenue, Green Bay, WI 54313

APPENDIX B.

Volunteer Aesthetics Monitoring Program Instructions for 2013

Volunteer Aesthetics Monitoring – Datasheet Instructions
Question by question instruction to Green Bay AOC Aesthetics Monitoring (Follow along with datasheet)

****Please evaluate water and immediate shoreline. Refrain from including anything on land in your assessment. ****Please fill out all questions on the datasheet completely and to the best of your ability.**

Contact Laurel Last with any questions – laurel.last@wisconsin.gov

Header

Station Name/Location- Enter station name here. If you do not know, please describe your location.
Demographic information – Please answer to the best of your knowledge.

Describe conditions at site during this particular visit

1. **Data Collector** (your name) - The name of the team member filling out the datasheet.
   Because of the subjectivity of most of the questions, only one person may fill out the datasheet. If there are multiple people present during field event, please fill out separate datasheets.

2. **Monitoring Date**- The date of the field event. Enter as MM/DD/YY.

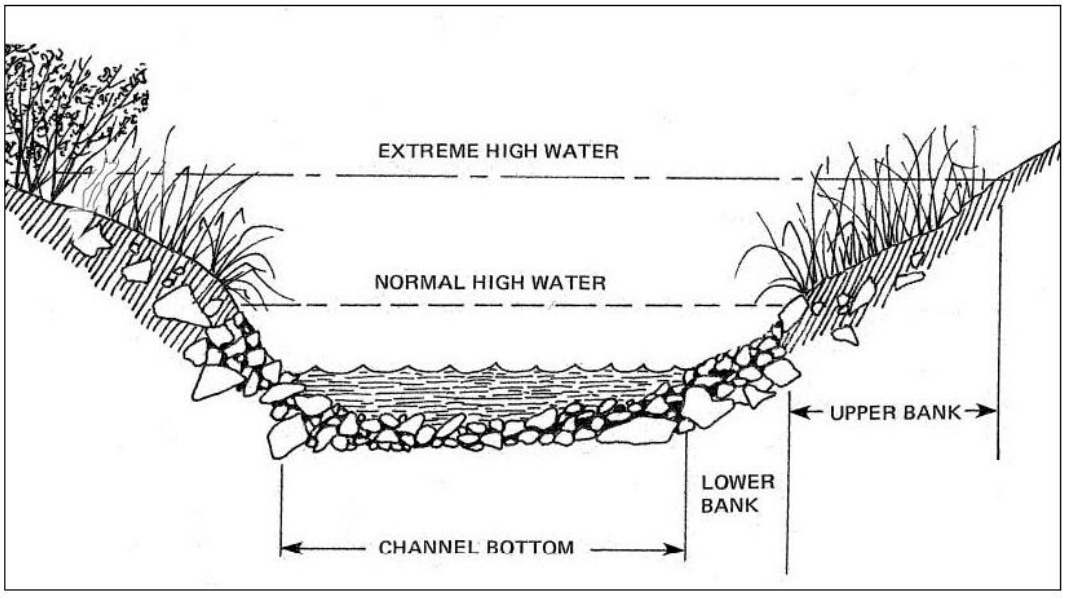
3. **Start Time**- The time you arrived at the station. Include AM/PM.

4. **Describe water conditions**- Please choose from the following: Flat/Calm, Slight Movement, Moderate Flow/Waves, Rough/Fast Flowing

   A. **Water Level**- Please record the water level of the area. Choose from the following: Don't Know, High, Low, Normal.

How to describe water level: This is something that you will feel more comfortable with assessing the more you visit your stream site. Some things to look for when you first visit your site to help you make the assessment are:

- Look to see if terrestrial vegetation along banks is submerged. The terrestrial vegetation will end at the normal high water mark.
- Look for water stains on rocks or bridge abutments. Water will stain rocks if it flows over or by them for an extended period of time. If you see stains above the level of water in the stream during your visit, the level is likely low.



This diagram shows a cross section of a typical streambank, demarcating the upper and lower banks.

5. **Did You Take Any Pictures? Y/N Please Describe**- Number your pictures in order and describe what you are photographing. Example: Photo 1 on 7/15/11, From east shoreline looking upstream. Photo 2 on 7/15/11, garbage on the beach is aesthetically displeasing. Take pictures to show why you think the station is pleasing or displeasing.

Overall aesthetic impression of the site

6. **Overall, Do You Find the Station Aesthetically Pleasing? Please Describe Why**- Please choose from the following: Very Pleasing, Somewhat Pleasing, Don't Know, Somewhat Displeasing, Very Displeasing. Please follow up your response with an explanation.

Color, odor, or unsightliness

7. **Are any <u>materials</u> producing color, odor or unsightliness present to the extent that they make the area unpleasant or block your ability to access, enjoy, or use the water? Answer YES or NO. If YES please describe.** – Look around your station and describe in the provided space if there is anything that fits the description above.

8. **Are the characteristics <u>of the water</u> (color, clarity, odor) presenting an unsightliness to the extent that they make the area unpleasant or block your ability to access, enjoy, or use the water? Answer YES or NO. If YES please describe.** – Look around your station and describe in the provided space if there is anything that fits the description above.

9. **Please describe the characteristics of the water during this particular visit. <u>Characteristics may be present or absent regardless of their ability to make the area unpleasant or block your ability to access, enjoy, or use the water</u>.** Please answer for the following categories:

    A. **Water Color** - Describe the color of the water from where you are standing. Please choose from the following: Clear, Red, Green, Brown, or Other (Please Describe). Please leave this section blank if you are colorblind.

    B. **Water Clarity** - Please describe the clarity of the water while looking from the shore. Please choose the best answer: Completely Clear, Fairly Clear, Fairly Cloudy, and Completely Cloudy.

    **In addition to the water clarity question it is optional to take a Transparency Tube reading.

Transparency Tube - <u>How to measure transparency:</u> Collect the sample away from the bay or stream bank in the main flow (well-mixed) area. Be careful not to disturb the bottom when you collect the water sample. If you get sediment from bottom disturbances, dump out the sample, and move upstream away from the disturbed area and try again. To collect a sample while standing on the shore, use a bucket or sample bottle attached to a pole so that you can reach off-shore. Scoop from below the surface in the upstream direction. Be careful not to stir up the sediment upstream of your sample. Pour the sample into the transparency tube through the nylon stocking provided.

Reading the Transparency Tube

For the observer, consistency is the key. If you initially wear your eyeglasses when you take the reading, then always wear your eyeglasses to take this measurement. Never wear sunglasses when you take this reading.

1. Remove large objects from the water sample. Filter through nylon stocking provided.
2. If the sample has settled, use a stirring stick to stir the sample, or pour the sample into a clean bucket and back into the transparency tube to suspend all materials.

3. Stand out of direct sunlight. If you cannot get to a shady place, use your body to cast a shadow on the tube (Figure 1).
4. If you are wearing sunglasses, remove them. Then look for the target (black and white) disc on the bottom of tube. If disc is visible, record the length of the tube (e.g., 120 cm) on the data sheet.
5. If target disc is not visible, have your partner let water out a little at a time using the valve at the bottom until disc is just visible (Figure 2). Have them stop letting water out immediately when you can just see the contrast between black and white on the disc.
6. Read the level of water in the tube in cm using the measuring tape on the side of the tube.
7. Record the measurement on your data sheet in cm.
8. Dump contents of tube on ground.
9. Collect a new sample then repeat steps 1 through 8.
10. Record the second measurement in cm on your data sheet.

Figure 1: Transparency tube shaded by observer.

Figure 2: Releasing water until the disk is just visible.

Question 9 continued:

C. **Odor of Water -** Please describe the smell, if any, coming from the water. Be sure not to describe odors from other areas, such as, a nearby garbage can or the city. Choose from the following options: No Smell, Fishy, Sulfur/Rotting Eggs, Algae/Decaying Plants, Musty/Wet Soil, Chlorine, or Other Smell (Please Describe). You may choose more than one odor of the water.

D. **Water surface -** Describe the condition of the surface of the water body. Please choose from the following: Normal, Oily Sheen, Neon Green Sheen, Foamy, Floating Aquatic Plants, Natural Debris (Example: sticks, leaves), Natural Debris Jams (Example: enough natural debris and potentially garbage that causes jamming), Other (please describe).

Substances causing objectionable deposits on shore or on the bottom of the Waterbody

10. **Are any of the following present on the shoreline or bottom of the waterbody <u>to the extent that they make the area unpleasant or block your ability to access, enjoy, or use the water</u>?**
******If the substance IS present, and is NOT to the extent that it makes the area unpleasant or blocks your ability to access, enjoy, or use the water; answer No and do not describe.

    A. **Garbage on the bottom** – Answer YES or NO
    If Yes, circle type(s) – If you are able to see what the submerged item is, please identify. Use the chart below and circle the type of garbage present. You can select more than one. If you are unable to identify item, do your best to describe.

    B. **Shoreline Garbage** – Answer YES or NO
    If Yes, circle type(s) -- Use the chart below and circle the type of garbage present. You can select more than one. If you circle 'Other', please describe.

Type	Street litter	Food-related litter	Medical items	Sewage-related	Building materials	Fishing related	Household waste	Other
Example	Cigarette filters	Food packing, beverage containers	Syringes	Condoms, tampons	Pieces of wood, siding	Fishing line, nets, lures	Household trash, plastic bags	Any garbage not represented

    C. **Algae** – Answer YES or NO
    If Yes, estimate percent of algae- <u>Only list algae if it causes the area to be unpleasant or block your ability to access, enjoy, or use the water.</u> Please estimate the percent of algae using the attached figure. Please use an exact number rather than a range.

    If Yes, circle type(s) – Please describe the type of algae present. Choose from the following: Blobs of Floating Material, Green Soupy, Attached to Rocks/Stringy, Matted, Other (please describe). You may record more than one type of algae.

    If Yes, circle color – Please record the color of algae present. Choose from the following: Light Green, Blue Green, Dark Green, Brown, Red, Yellow, Other (please describe). You may record more than one color of algae. Please leave this section blank if you are colorblind.

    D. **Problem Animals or problems caused by animals**– Answer YES or NO
    If Yes, list type(s) and reason for problem. <u>Only list animals or problems if they cause the area to be unpleasant or block your ability to access, enjoy, or use the water.</u> Problems caused by animals may still be present even if the animal is not at the time of the survey.

    E. **Dead Animals** – Answer YES or NO
    If Yes, list type(s) and amount – <u>Only list dead animals if they cause the area to be unpleasant or block your ability to access, enjoy, or use the water.</u> Please record amount using a whole number. Avoid using ranges (12 instead of 10-15).

F. **Invasive Species (e.g., Phragmites, zebra/quagga mussels, other)** – Answer YES or NO
If Yes, list type(s) and amount – Only list invasive species if they cause the area to be unpleasant or block your ability to access, enjoy, or use the water. If you are able to identify invasive species located at the station, please record the species and amount.

G. **Other (shoreline or on the bottom)** – Answer YES or NO. Is there anything else that does not fit in the categories above that is present along the shoreline or bottom of the waterbody to the extent that they make the area unpleasant or block your ability to enjoy the water? If so, please describe in the space provided.

Substances causing objectionable deposits floating or suspended in the water

11. **Are any of the following visible to you floating or suspended in the water to the extent that they make the area unpleasant or block your ability to access, enjoy, or use the water –** Please answer all of the following categories:
    A. **Garbage** – Answer YES or NO
    If Yes, estimate percent of garbage floating or suspended in the water - Only list garbage if it causes the area to be unpleasant or block your ability to access, enjoy, or use the water. Use the attached figure to help you estimate percentages. Please use an exact number rather than a range.

    If Yes, please circle type(s) – Use the chart in question 10-A and B and circle the type of garbage present. You can select more than one. If you circle 'Other', please describe.

    B. **Algae** – Answer YES or NO
    If Yes, estimate percent of algae floating or suspended in the water - Only list algae if it causes the area to be unpleasant or block your ability to access, enjoy, or use the water. Please estimate the percent of algae present using the attached figure. Please use an exact number rather than a range.

    If Yes, circle type(s) – Please describe the type of algae present, if any. Choose from the following: Blobs of Floating Material, Green Soupy, Attached to Rocks/Stringy, Matted, Other (please describe). You may record more than one type of algae if present.

    If Yes, circle color – Please record the color of algae present, if any. Choose from the following: Light Green, Blue Green, Dark Green, Brown, Red, Yellow, Other (please describe). You may record more than one color of algae if present. Please leave this section blank if you are colorblind.

    C. **Other (suspended or floating in the water)** – Answer YES or NO. Is there anything else that does not fit in the categories above that is present in the water to the extent that they make the area unpleasant or block your ability to access the water? If so, please describe in the space provided.

Survey End

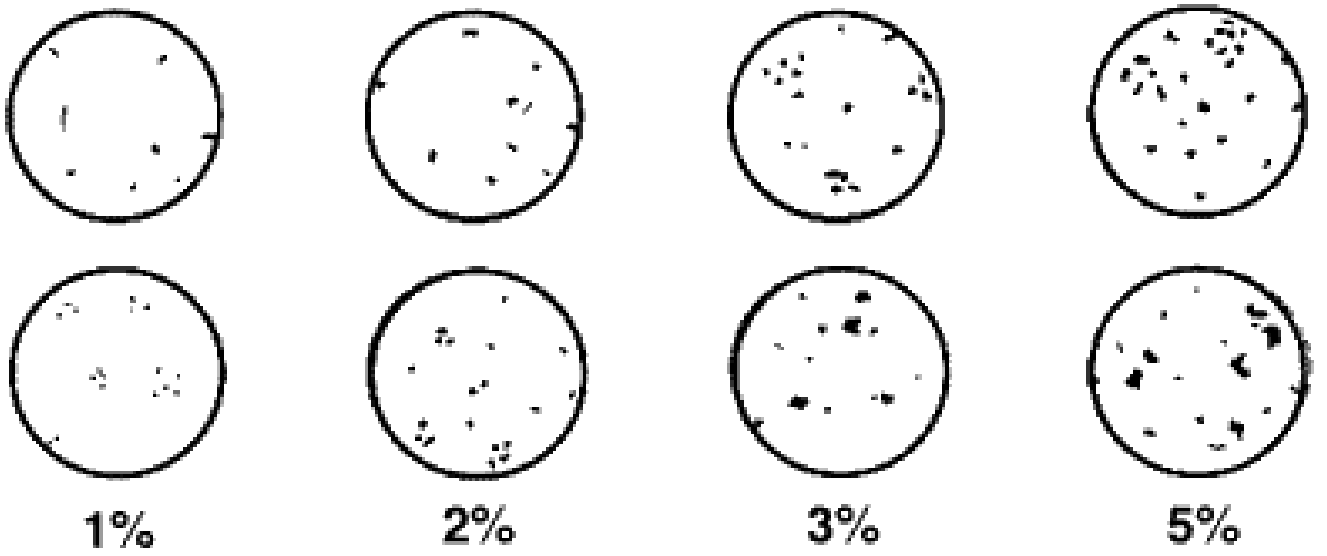
12. **Have You Previously Evaluated This Station? -** Answer YES or NO

13. **If you have previously evaluated this station, what changes if any have you noticed in the aesthetic quality of the water or along the shoreline since your last visit?** - Describe any changes in the space provided on the datasheet.

14. **While filling out this survey, please describe the most difficult task (if any**) – Did you find a particular question difficult to answer or task difficult to complete? Please record that here.

15. **Comments** – Record any additional comments in the space provided. Consider things that you thought should be reported but where not asked. (Weather conditions, unique animal sightings, etc.)

16. **End Time –** Please record the time the field was completed. **Thank You!**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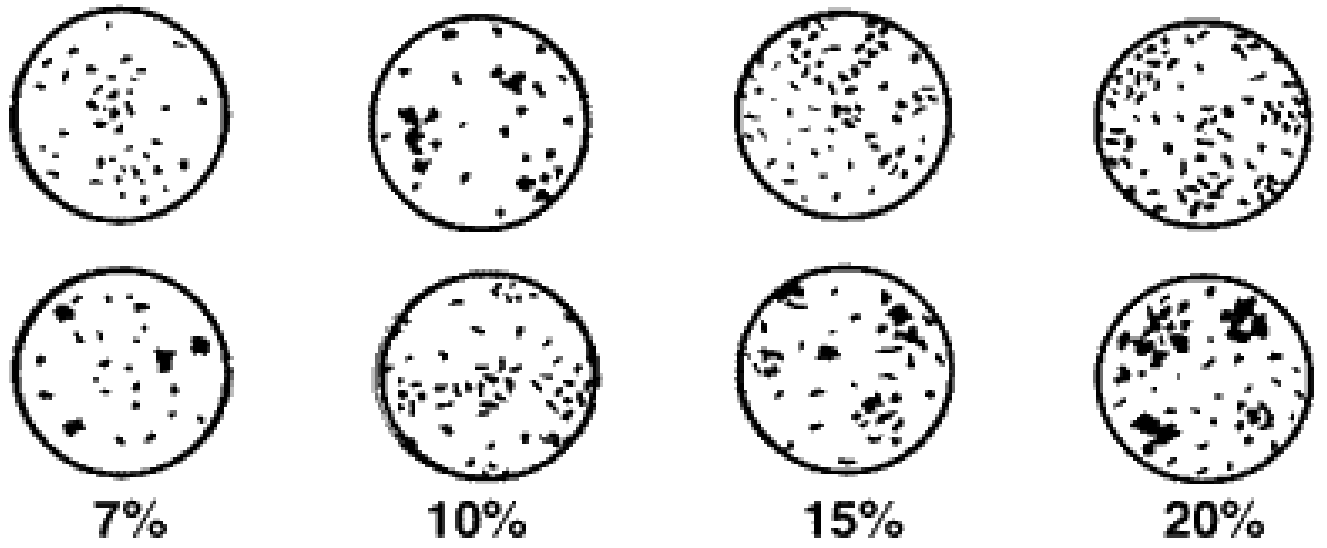
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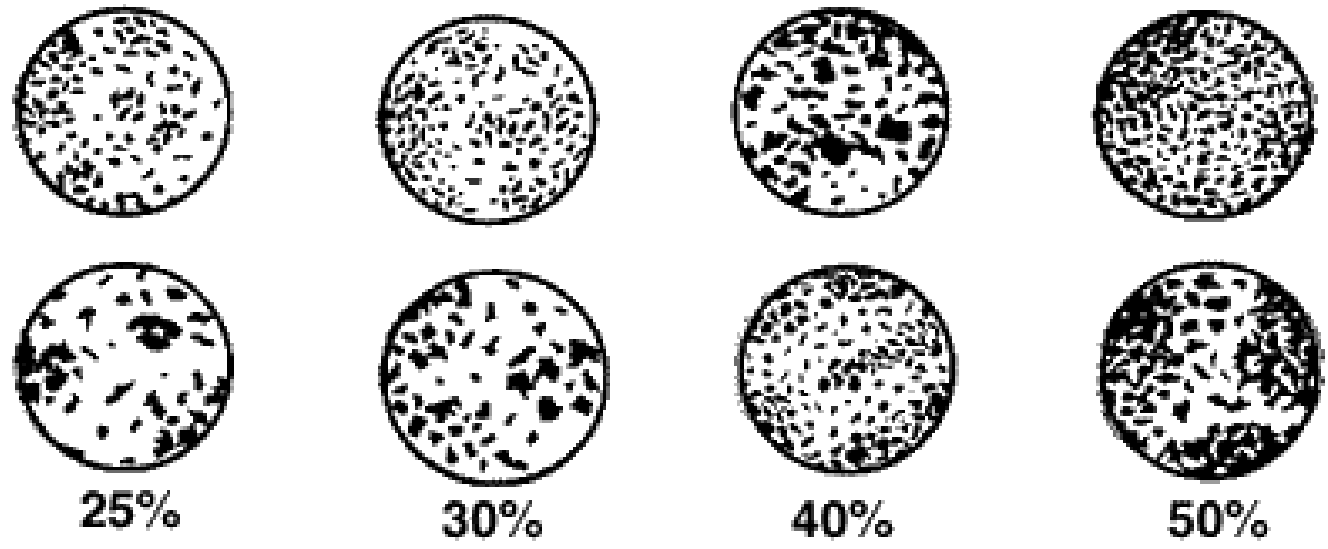
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APPENDIX C.

2013 Citizen Survey Project Survey Form

Lower Green Bay and Fox River Aesthetics Monitoring Project Citizen Survey

1. How many years have you been visiting this site? If this is the first year, answer "**1**." _____

2. Overall, how pleasing (beautiful) do you find the site? Please choose one of the following options, focusing on the water and the immediate shoreline:

   Very Pleasing Somewhat Pleasing Neutral Somewhat Displeasing Very Displeasing

   Please list any observations that make it pleasing or displeasing.

_____

_____

_____

3. Are you aware of any materials present in the water, on the water, or on the shore that produce color, odor, or unsightliness to the extent that they make the area unpleasant or block your ability to access or use the water? YES NO

If Yes, please describe. _____

_____

_____

4. Have you noticed a change in the overall appearance of the water or shoreline at this site over time?

   Yes, improved Yes, got worse No, no change Don't know

If Yes, please describe. _____

_____

5. Background information: Sex (please circle): M F Age: _____

   Is Wisconsin your primary residence? YES NO

   If YES, in which county do you reside? _____

   If NO, in which other state or country do you reside? _____

6. Survey information (filled in by surveyor):

   Data Collector/Surveyor

   Station Name/Location (SWIMS ID)

   Monitoring Date Start Time