

Nokomis Neighborhood Water Quality KAP Survey

May 17 2013



Conducted by Metro Blooms in partnership with the University of Minnesota Water Resources Center, Minnehaha Creek Watershed District, and the City of Minneapolis

Funded by the City of Minneapolis

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Acknowledgements

Metro Blooms thanks the City of Minneapolis and Minnehaha Creek Watershed District for funding this study, Karlyn Eckman with the Water Resources Center for her expertise throughout the project, and Cathy Jensen with the Minnesota Pollution Control Agency for reviewing the final survey. Thanks to Steffanie Musich with Friends of Lake Nokomis for her help in recruiting the final participants for the survey and her input in the gap exercise and survey design. Also, thank you to Leslie Yetka with MCWD, Lois Eberhart with the City of Minneapolis, and Mike Perniel and MaryLynn Pulscher with Minneapolis Parks and Recreation Board for their participation in the gap exercise and survey design. To the people that pre-tested the survey, thank you for your thoughtful opinions and insight.

Our doorknockers, Laila Davis, Jenna Klawitter, Jennifer Theodore, Jill Galles, Donald Hon, Teran Smith, Alice Nelson-Lindall and Linda Hayes, for their long hours in inclement weather. Their assistance was greatly appreciated, as was Jenna Klawitter's work with data entry. Lastly, thank you to all of the Nokomis neighborhood residents who took the time to complete the KAP survey and share their thoughts on stormwater runoff and Lake Nokomis.

Introduction

Today in Minnesota, about 40% of our water bodies are impaired for conventional pollutants (MPCA 2013). While each water body has its own unique set of water quality issues, non-point source pollution is the leading cause of pollution in urban waterways (EPA 1996). In order to manage this type of pollution, local governments are turning to citizens to manage stormwater on their property in order to minimize the polluted runoff that enters our storm drains. Metro Blooms has been working with cities, watershed districts, neighborhood residents, and businesses since 1983 to promote eco-friendly landscaping and educate citizens about the importance of stormwater management.

Metro Blooms began working with the City of Minneapolis and Minnehaha Creek Watershed District in 2012 on a project in the Nokomis neighborhoods of Minneapolis to engage residents and business owners in a project to prevent polluted stormwater from entering Lake Nokomis. Lake Nokomis, due to excessive Phosphorus, is one of the impaired water bodies in Minnesota (EPA 2013). The quality of water in the lake must be improved so the City of Minneapolis is able to meet their MS4 permit requirements to discharge stormwater runoff into the lake. In order to enable property owners in the neighborhood to manage their stormwater and improve the water quality of Lake Nokomis, Metro Blooms will install best management practices in the form of raingardens and permeable paver strips at 150 properties in the Lake Nokomis subwatershed over the next four years. In order to tailor an education and outreach campaign for the community, Metro Blooms, in partnership with the City of Minneapolis and the University of

Minnesota Water Resources Center, conducted a KAP (knowledge, attitudes, and practices) survey during the winter of 2013. The preliminary findings of the first round of the Nokomis Neighborhood KAP survey are summarized in this report.

Methods

Knowledge, Attitudes and Practices (KAP) Survey

Metro Blooms contracted Karlyn Eckman of the University of Minnesota Water Resources Center (WRC) to consult on a KAP study of the residents in the neighborhoods surrounding Lake Nokomis during the winter of 2012-2013. The WRC has been a part of over 20 KAP surveys in the past 6 years and have found the KAP method to be comparatively quick and cost-effective. The Nokomis KAP study began with a brainstorming exercise called a “gap exercise” with stakeholders in the project to identify gaps in knowledge about residents and their attitudes and practices in regards to water quality. Possible barriers to installing stormwater management practices on site and current resident knowledge were also discussed. The brainstorming session resulted in a list of “gaps” that was then narrowed down and transformed into a draft questionnaire for further revision by the above mentioned stakeholders.

The questionnaire was then pre-tested and finalized. Lastly, a letter introducing the purpose of the survey, dates that the survey would take place, and confidentiality information was mailed to the 701 randomly selected residents in the Nokomis subwatershed that would be receiving the survey. The pre-survey letter also gave residents the option to take the survey online through Survey Monkey before the door-to-door surveying began. The first-round KAP survey is attached as an annex to this report as is the introductory letter.

Study Area

The area of interest for this KAP study was the entire subwatershed of Lake Nokomis (Fig. 1). The subwatershed was divided into five quadrants with 127-153 targeted residences in each quadrant. This separation allowed for easier organization among the doorknocking team and, in the future, could allow researchers to compare responses based on a participants’ proximity to Lake Nokomis.

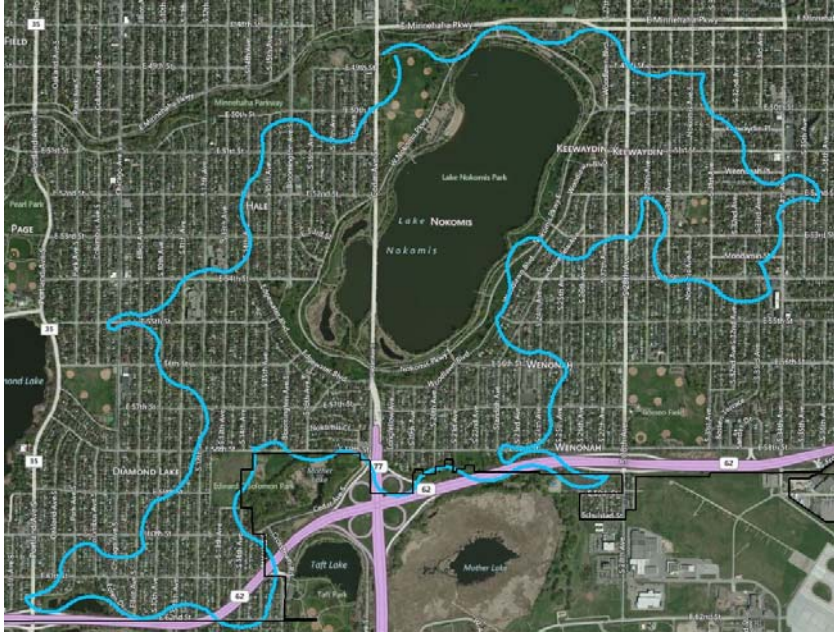


Figure 1. Outline of the Lake Nokomis subwatershed and the study area of this KAP survey.

Survey Sample

The sampling frame was obtained using Hennepin county parcel data in ArcGIS. Businesses, apartments, duplexes and vacant homes were removed from the sampling frame because we wanted to target homeowners in the area. Due to the large size of the remaining sampling frame (2,650 residences), a random sample was created. Using a 95% confidence level, a 5% confidence interval, and assuming a 55% response rate, our final sample consisted of 701 homes in the Lake Nokomis subwatershed. To obtain the final sample, an Excel spreadsheet was created and every fourth household was chosen from our initial sampling frame of 2,650. Next, the final 701 households were divided into five quadrants based on their location in terms of Lake Nokomis (East, Southeast, West, Southwest, and Far Southwest) and maps were created for each quadrant with the selected houses highlighted. Throughout the door-to-door part of the survey, 17 houses were found to be vacant or foreclosed, reducing our sample size to 684 properties.

Administering the Survey

In the introductory letter sent to residents before the door-to-door survey began, residents were given the option to take the survey online through Survey Monkey. Eighty-seven residents took the survey online prior to doorknocking, reducing our door-to-door sample to 597 households. In January of 2013, 8 doorknockers were hired by Metro Blooms to administer the door-to-door survey. The survey team was trained by Karlyn Eckman on the KAP survey method, research ethics, mock interviewing and confidentiality. Doorknockers were divided into teams of two, with Laura Hurley of Metro Blooms and Karlyn comprising a team as well, and each team was assigned a quadrant. Each team also received a map of their quadrant with houses in the sample

population highlighted, surveys, response sheets, and a master list with the addresses, names and place to record date of visit for each house.

During the week of February 11th-16th, doorknockers were dispatched to the Nokomis neighborhoods to interview residents door-to-door. It became evident within the first few days of doorknocking that many people were not home during the allotted doorknocking hours (4-7pm). After three days of doorknocking only 40 homeowners in the sample population had been home and agreed to take the survey. Due to this low response rate, doorknockers began dropping surveys to be mailed back to Metro Blooms at residences on the fourth day, instead of giving the survey in person. Each mail packet contained a survey, a self-addressed and stamped envelope, and a note describing the survey and providing contact information for questions.

After the online link had been provided in the introductory letter and after three days of doorknocking, only 19% of the potential sample had taken the survey. However, a week after the mail surveys were dropped, a 35% response rate was reached. Mail surveys continued to be returned for the next two months, and in mid-April a total of 352 surveys had been returned or taken online for a response rate of 52% (Table 1).

Table 1: Response Data

Quadrant	Initial Sample	Refusals¹	Vacant, Dup, etc.	Adjusted Sample	Online Subtotal	In-person Subtotal	Mail Subtotal	SUM
West	127	2	2	125	18	8	10	36
Southwest	141	8	2	139	16	11	6	33
Far SW	134	1	5	129	13	4	3	20
East	146	7	1	145	19	5	14	36
Southeast	153	10	8	145	21	12	6	39
Unspecified²							186	186
Total	701	28	17	684	87	40	225	352
Cum Total					87	127	352	
Cum Total RR%					13%	19%		52%

¹ Because surveys were only given in-person for three days, the refusals only reflect the homeowners talked to in those three days.

² The large number of unspecified quadrant surveys is due to the lack of return addresses on the mailed surveys. When the survey is repeated after the completion of the Nokomis project, addresses will be written on the surveys before they are left for residents.

Results

Throughout the study, in-person and mailed survey responses were manually entered into Survey Monkey, which was used for data analysis as well as storage. The majority of residents that participated in the study had a fairly high level of knowledge about stormwater. Their attitudes and practices also revealed high values. Participants were asked about barriers to protecting clean water as well. The KAP survey will be repeated after the completion of the Nokomis project in order to quantify any changes in attitudes, knowledge and behaviors in the community. The results below represent findings from the first-round of the KAP study.

Knowledge

The knowledge questions in the Nokomis KAP survey were meant to gauge residents' knowledge about stormwater runoff and its effects, but also about best management practices such as raingardens and primary causes of runoff pollution in the neighborhood. The first knowledge question of the KAP survey (Q9) examined participants' knowledge of raingardens. The majority (68%) of participants recognizes that raingardens are gardens that capture runoff, but 19% said they didn't know and another 6% believed raingardens to be a garden that doesn't need to be watered.

The next knowledge question (Q10) asked residents about their knowledge of where the stormwater from their community flows to. Participants were less sure of this question, with 39% reporting that their stormwater went to Lake Nokomis (the correct answer) and 29% reporting that they didn't know (Fig. 2). However, only 5% believed their stormwater flowed to a water treatment plant, which reveals that while people are unsure of which water body their stormwater drains to, most recognize that it does not get treated first.

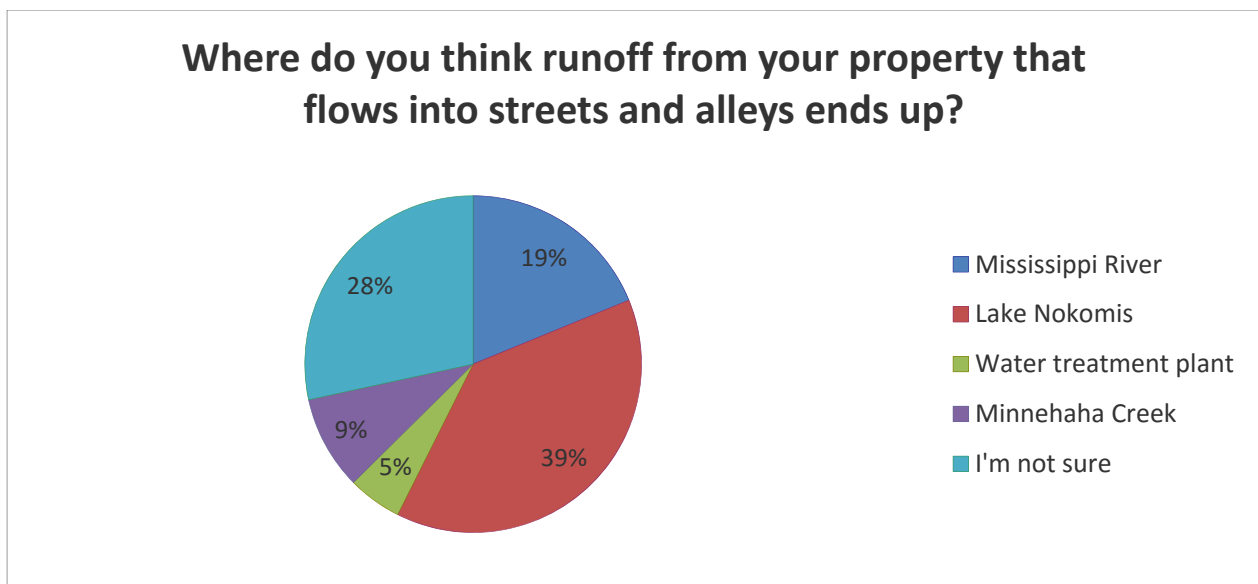


Figure 2. Nokomis neighborhood resident knowledge about the path of their stormwater.

The final two knowledge questions (Q11, 12) asked about the effects that runoff has on Lake Nokomis and also about the source of pollution in the lake. Residents showed very high knowledge for both of these questions. Ninety-seven percent reported that runoff has some sort of negative effect on Lake Nokomis and 82% of participants said road runoff or yard runoff were the primary source of pollution in Lake Nokomis (Fig. 3).

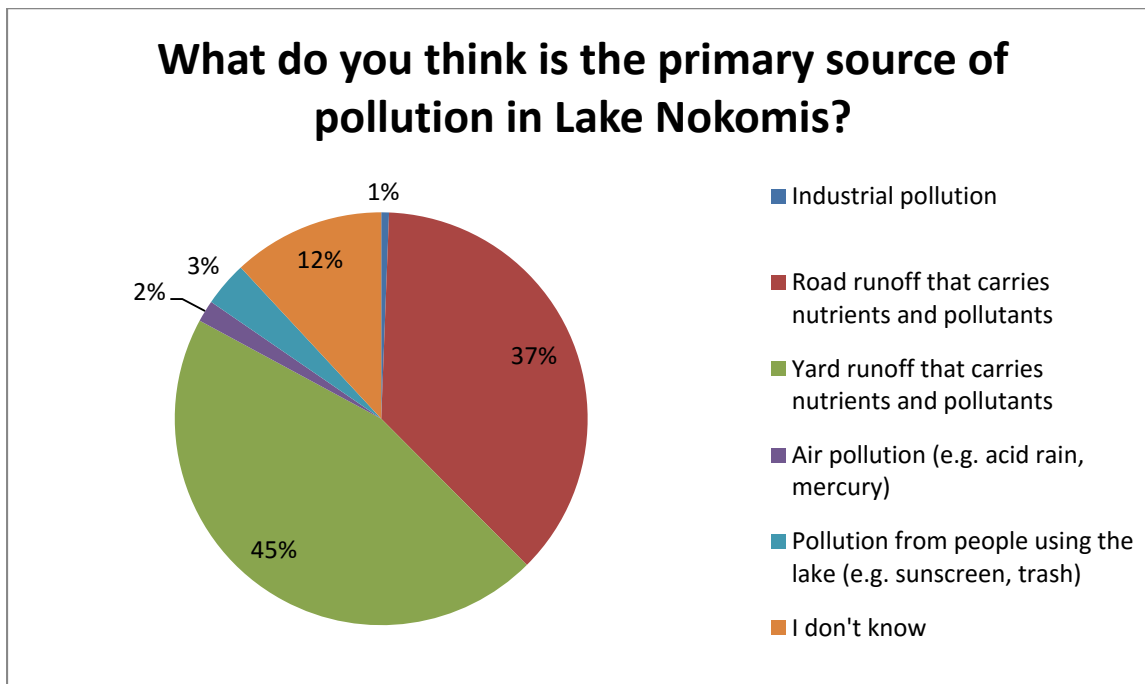


Figure 3. Knowledge about non-point source pollution in Lake Nokomis is very high.

Attitudes

The attitude questions in the KAP survey revealed how residents use Lake Nokomis, the connection they make between their practices and the quality of the lake, their beliefs about who should be responsible for the lake and also about who they trust as a source of information. Most residents (71%) are either very concerned or fairly concerned about the water quality of Lake Nokomis (Q1). This shows us that they recognize the issue, although many people also said they believed the quality of the lake had improved since the city installed storm ponds. Furthermore, people acknowledge that it's an issue even though most don't value the lake for its water recreation activities. The walking and biking paths are the number one reason people most value Lake Nokomis, with aesthetic value/general beauty next on their list (Q3).

Question 4 asked about the connection participants made between their yard care activities and the water quality of Lake Nokomis. Most (82%) somewhat or completely agreed that their yard care activities affected the lake. Interestingly, many people that said they did not at all agree reported in the comments section that they didn't agree because their actions were very "eco-

friendly.” During the door-to-door survey a couple residents also reported that their actions didn’t affect the water quality but they had a neighbor whose actions certainly did.

Participants were also asked about who they believed should be responsible for maintaining clean water in Lake Nokomis (Q13). Respondents were allowed to “circle all that applied” and while the vast majority (87%) said the City of Minneapolis should play a part, 72% also believed neighborhood residents were responsible. Minnehaha Creek Watershed District (MCWD) was third (70%) and local businesses came in fourth (55%) (Fig. 4). The number of respondents who reported that MCWD should play a part shows us that most people know what MCWD is and what they do, again proving the communities high level of knowledge about water issues.

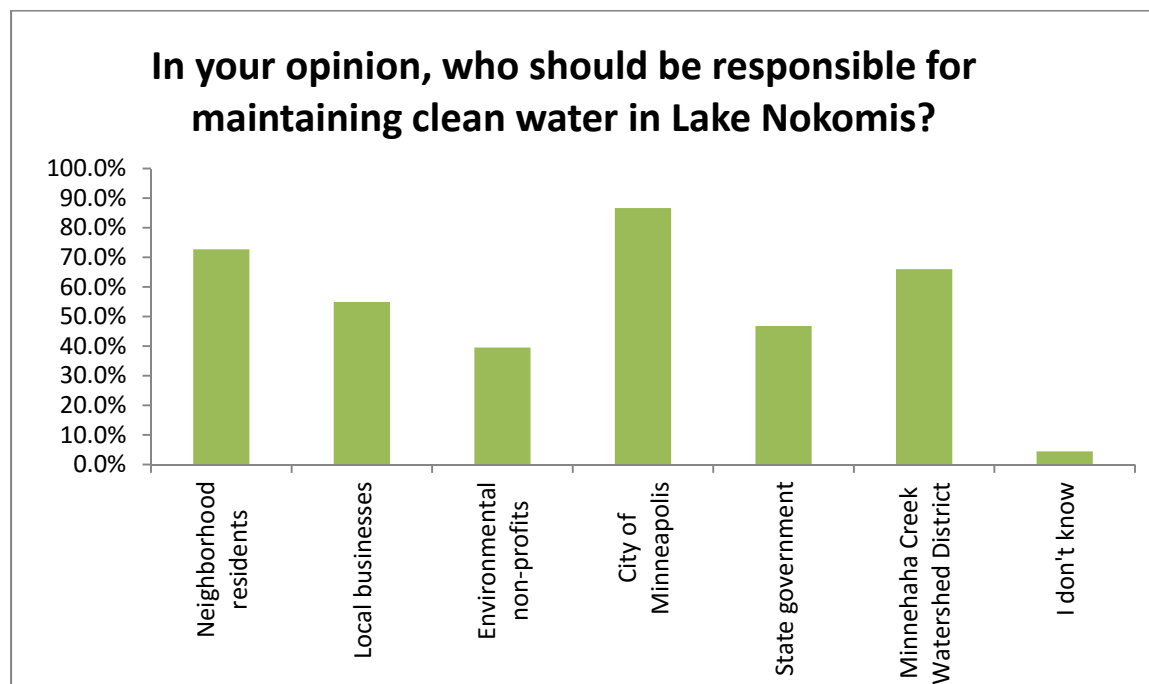


Figure 4. Attitudes about responsibility for maintaining clean water in Lake Nokomis.

At the end of the survey, residents were asked how they preferred to receive information about projects in their community. Most said through email or mail were their preferred methods, with another 43% saying through a neighborhood newsletter and 21% preferring to gain information through a website (examples included the neighborhood association, Mpls Parks and Rec, the City of Mpls, Metro Blooms, and Northern Gardener). Lastly, question 19, people were asked who they trust as a source of environmental information. Most people reported trusting large agencies such as the DNR, MPCA, and the University of Minnesota. Fewer (28%) trusted a city staff person, which is interesting because 87% said the city should be responsible for the water quality of Lake Nokomis.

Practices

The practices questions focused mainly on residents’ yard-care practices, but also on their alley maintenance and what they would be willing to add to their current practices. The first practices questions asked about grass clipping and leaf disposal (Q5, 6). Again, respondents showed knowledge of the “correct” practices for water quality sake. Sixty percent left their grass clippings on the lawn and another 27% bagged and put them out for the city to pick up. Nobody reported sweeping or blowing them out of their yard. Responses were similar for leaf disposal, with 70% saying they bag and put out leaves for the city to pick up.

When asked about other yard-care practices that affect water quality, 48% reported using fertilizers and 58% use salt during the winter. However, 70% direct their downspouts to grass or a garden. Only 10 people (3%) have a raingarden, but more people (9%) have permeable pavers on their property (Fig. 5). Alley maintenance was higher than assumed, showing that 83% of residents pick up trash and debris from their alley, while only 9% don’t do anything to maintain their alley.



Figure 5. Lawn-care practices of Nokomis neighborhood residents.

The last practices questions focused on what residents would be willing to do. Predictably, the simplest tasks, such as sweeping their driveway, fertilizing less frequently and using less salt and sand during the winter, had the highest responses (Fig. 6). In addition, 45% would be willing to install a raingarden, which leads to the next question of whether the respondent would be interested in participating in an alley beautification program to improve the water quality of Lake

Nokomis. Overwhelmingly, people want to participate, with 295 people saying yes or maybe. This widespread support was an unexpected outcome of the KAP survey. Knowing the contact information for the properties that stated they would participate will make Metro Blooms' outreach somewhat simpler.

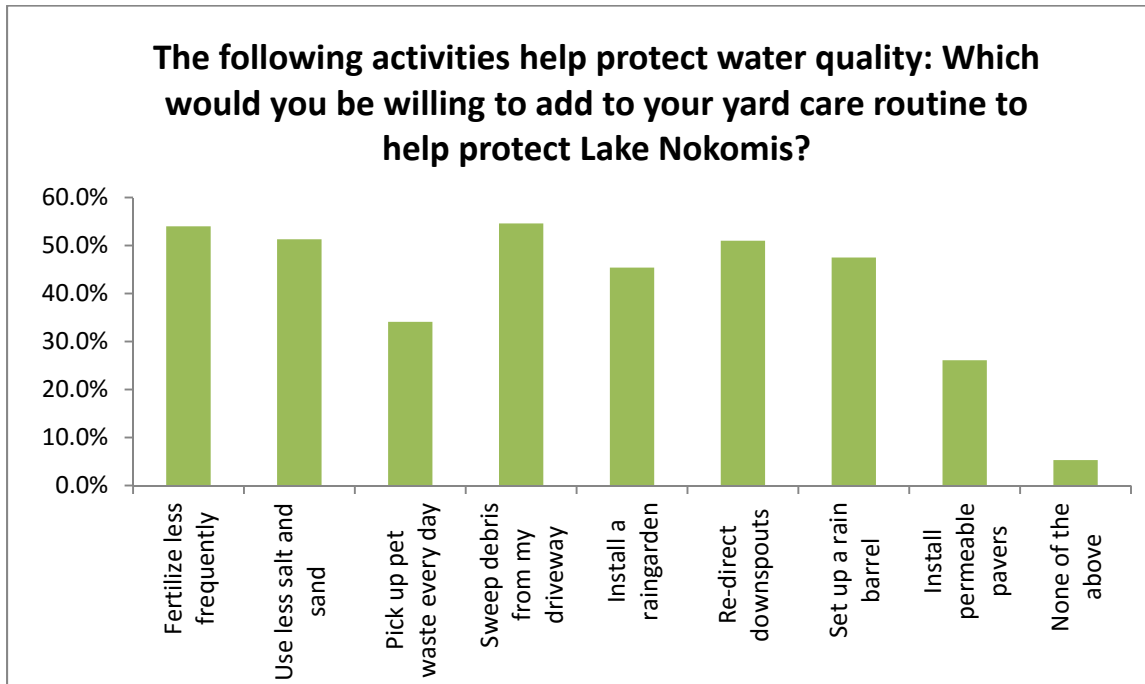


Figure 6. Practices that residents would be willing to add to their routine.

Barriers

This survey asked a couple of questions about barriers to better water quality practices and also what would help residents adopt practices (Q15, 16). When asked what most prevented participants from taking action/additional action to protect clean water, the most common answer (38%) was that nothing prevents people from taking action. The second and third most common answers give us more information, as 22% said “I don’t know what to do” and 20% reported taking additional action was too expensive (Fig. 7). As a follow-up, participants were asked what would help them to take action. All of the options had high response rates but the highest were funds, online resources, and on-site help from a landscape professional (Fig. 8).

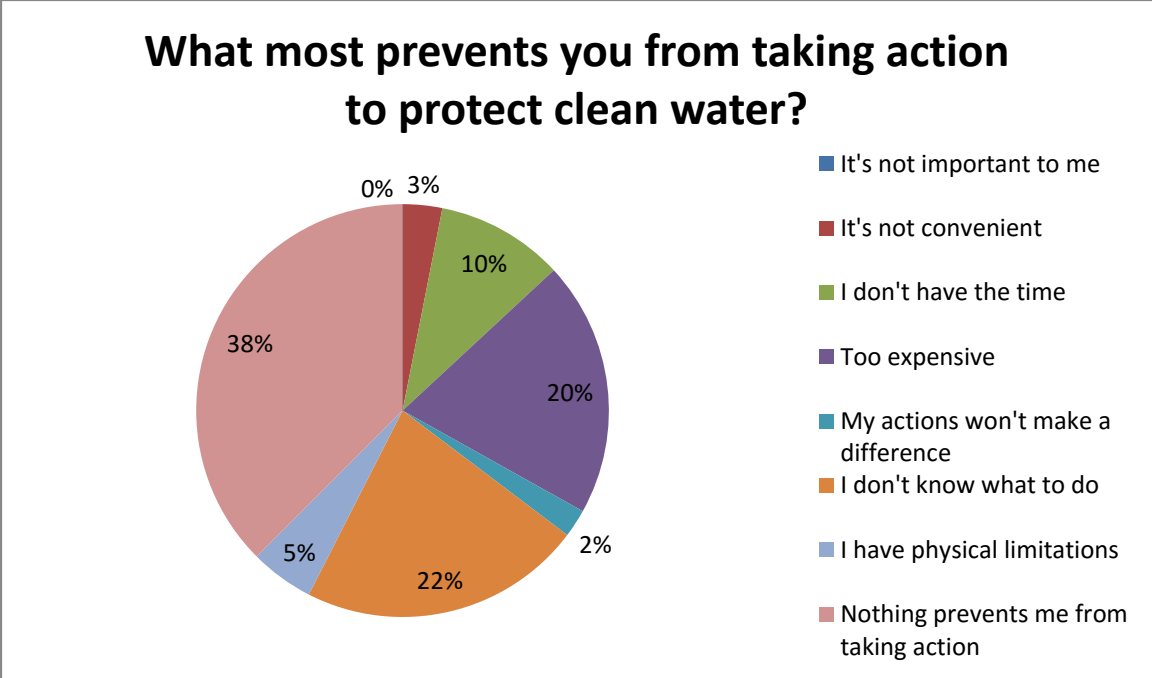


Figure 7. Barriers for residents to taking additional action to protect Lake Nokomis.

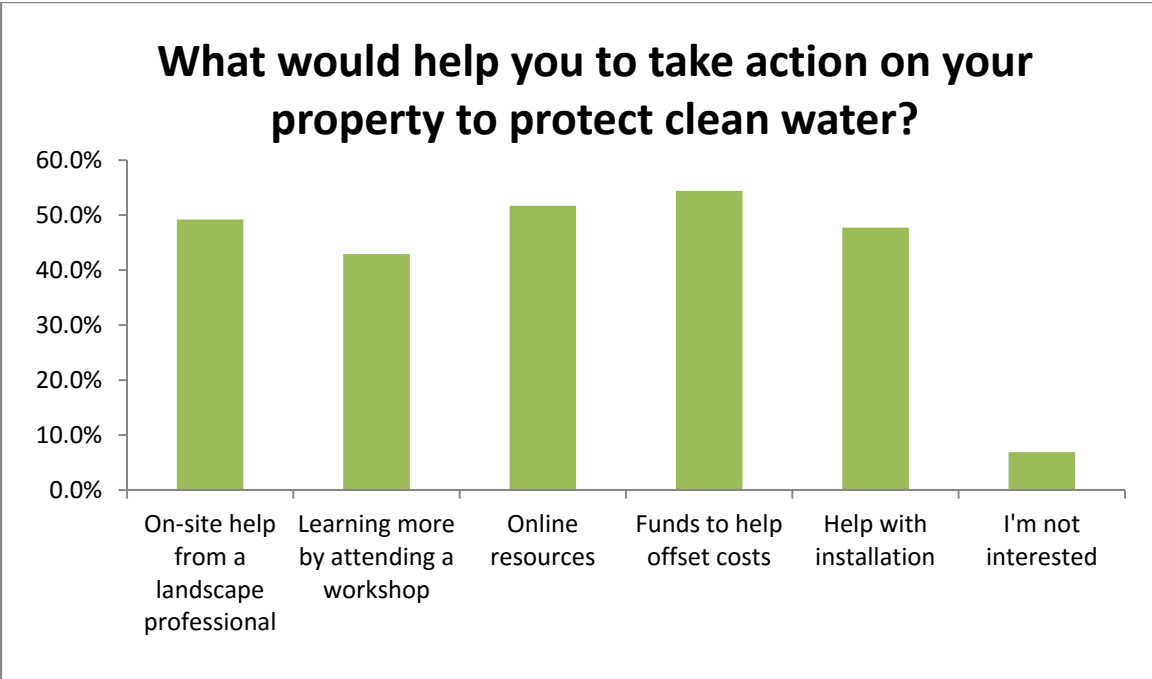


Figure 8. Resources that would help residents take action to clean up Lake Nokomis.

Conclusions

In general, the neighborhoods surrounding Lake Nokomis seem to be aware of stormwater runoff issues and how they connect to their yard care practices and are open to participating in programs to improve water quality in the lake. In particular, most residents are aware of how raingardens function. However, very few people have installed raingardens or permeable pavers. The education gap seems to be between recognizing the need for healthy lawn care practices and having the knowledge to implement them. This was demonstrated when we asked residents about barriers. If a barrier was acknowledged, the highest ranked answer was not knowing what to do. This presents the greatest opportunity for education; to show residents how they can implement practices on their own property. This could potentially be done through demonstration yards or raingardens, by distributing informational pamphlets, and encouraging residents to attend do-it-yourself workshops.

Another possible reason for very few installed raingardens, permeable pavers, and rain barrels in the neighborhoods is the perceived expense of installing such practices. Cost was an important barrier for respondents, more so than time and convenience. This suggests the need for low-cost programs, and could also mean that people are unaware of cost-share programs through the watershed district that already do exist.

There seems to be widespread support for water quality improvements in the Nokomis community, and people are willing to work with their community and involve their own property in a project. Knowledge could be improved on where stormwater in the neighborhood flows to (many people believed it was directly to Minnehaha Creek or the Mississippi River), but the majority do recognize that it flows untreated to a nearby water body. Furthermore, residents recognize road and yard runoff as the leading pollutants in Lake Nokomis. The connection has been made and the desire is present; residents now require assistance in putting to action what they already know will improve water quality.

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Q5. What do you usually do with grass clippings after mowing the lawn?
(Circle one)

- 1) Leave them on the lawn
 - 2) Compost them on my property
 - 3) Bag and put them out for the city to pick up
 - 4) Sweep or blow them out of my yard
 - 5) I hire a lawn care service to mow my yard (please specify which one):
- Other (please specify): _____

Q6. What do you usually do with leaves in your yard? (Circle one)

- 1) Mow and mulch them
 - 2) Compost them on my property
 - 3) Bag and put them out for the city to pick up
 - 4) Rake them into the street
 - 5) I don't do anything with them
 - 6) I hire a lawn care service to rake my leaves (please specify which one):
- Other (please specify): _____

Q7. Which, if any, of the following do you practice on your property? (Circle all that apply)

- 1) I use fertilizers
 - 2) I use salt or de-icer during the winter
 - 3) I pick up and dispose of pet waste
 - 4) I sweep dirt and debris off of my driveway and into my yard
 - 5) I have a raingarden
 - 6) My downspouts lead to grass or a garden
 - 7) I use a rain barrel
 - 8) I have permeable pavers
- Other (please specify): _____

Q8. If you have an alley behind your house, which, if any, of the following do you practice to maintain it? (Circle all that apply)

- 1) I pick up trash and debris
 - 2) I have a raingarden to prevent runoff into my alley
 - 3) I've diverted downspouts from my house and garage away from my alley
 - 4) I don't do anything to maintain my alley
 - 5) There isn't an alley behind my house
- Other (please specify): _____

Q9. Which of the following do you think best describes a raingarden? (Circle one)

- 1) Pond or other water feature
 - 2) Garden to capture runoff
 - 3) Garden that doesn't need to be watered
 - 4) Native flower garden
 - 5) I don't know
- Other (please specify): _____

Q10. Where do you think runoff from your property that flows into streets and alleys ends up? (Circle one)

- 1) Mississippi River
 - 2) Lake Nokomis
 - 3) Water treatment plant
 - 4) Minnehaha Creek
 - 5) I'm not sure
- Other (please specify): _____

Q11. Which, if any, of the following effects do you think runoff could have on Lake Nokomis? (Circle all that apply)

- 1) Affects fish and aquatic life
- 2) Promotes harmful bacteria and fungi
- 3) Causes it to smell and look bad
- 4) Limits recreation
- 5) No effect
- 6) I don't know

Other (please specify): _____

Q12. What do you think is the primary source of pollution in Lake Nokomis? (Circle one)

- 1) Industrial pollution
- 2) Road runoff that carries nutrients and pollutants (e.g. salt, sand)
- 3) Yard runoff that carries nutrients and pollutants (e.g. pet waste, lawn fertilizer, grass clippings, leaves)
- 4) Air pollution (e.g. acid rain, mercury)
- 5) Pollution from people using the lake (e.g. sunscreen, trash)
- 6) I don't know

Other (please specify): _____

Q13. In your opinion, who should be responsible for maintaining clean water in Lake Nokomis? (Circle all that apply)

- 1) Neighborhood residents
- 2) Local businesses
- 3) Environmental non-profits
- 4) City of Minneapolis
- 5) State government
- 6) Minnehaha Creek Watershed District
- 7) I don't know

Other (please specify): _____

Q14. The following activities help protect water quality: Which, if any, would you be willing to add to your yard care routine to help protect Lake Nokomis?
(Circle all that apply)

- 1) Fertilize less frequently
- 2) Use less salt and sand on my sidewalk and driveway
- 3) Pick up and dispose of pet waste every day
- 4) Sweep dirt and debris from my driveway into my yard or pick it up
- 5) Install a raingarden
- 6) Direct downspouts towards a garden or grass
- 7) Set up a rain barrel
- 8) Install permeable pavers
- 9) None of the above

Q15. What most prevents you from taking action or additional action to protect clean water? *(Circle one)*

- 1) It's not important to me
- 2) It's not convenient
- 3) I don't have the time
- 4) Too expensive
- 5) My actions won't make a difference
- 6) I don't know what to do
- 7) I have physical limitations
- 8) Nothing prevents me from taking action

Other (please specify): _____

Q16. What would help you to take action on your property to protect clean water? *(Circle all that apply)*

- 1) On-site help from a landscape professional
- 2) Learning more by attending a workshop
- 3) Online resources
- 4) Funds to help offset costs
- 5) Help with installation
- 6) I'm not interested

Other (please specify): _____

Q17. Metro Blooms is working in your neighborhood to prevent polluted runoff from entering Lake Nokomis. Would you be willing to participate in an alley beautification project with Metro Blooms and your neighbors to improve the water quality of Lake Nokomis?

- 1) Yes
- 2) No
- 3) Maybe, I'd like to know more

Q18. How do you prefer to receive information about activities and projects in your community? (Circle all that apply)

- 1) Through social media (Facebook, Twitter, etc.)
 - 2) Local newspaper
 - 3) Neighborhood newsletter
 - 4) By mail
 - 5) Through Email
 - 6) In person (at events, workshops, etc.)
 - 7) By visiting a website (please specify which ones): _____

- Other (please specify): _____

Q19. Who do you trust as a source of environmental information in your community? (Circle all that apply)

- 1) My neighborhood association
 - 2) City staff person
 - 3) Environmental non-profit
 - 4) University of Minnesota Extension Office
 - 5) Department of Natural Resources (DNR)
 - 6) Minnesota Pollution Control Agency
 - 7) My neighbor
- Other (please specify): _____

If you'd like to provide your email Metro Blooms will contact you with further information regarding our upcoming Neighborhood of Raingardens project.

Email:

Appendix II