

# An Evaluation of Community Outreach and Perceptions of Contaminated Sediment Remediation in the Sheboygan River Area of Concern

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*Courtesy of U.S. Environmental Protection Agency*



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Remediation in the Sheboygan River Area of Concern

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## SUMMARY

Following the completion of all environmental management actions at the Sheboygan River Area of Concern (AOC), a study to evaluate the effectiveness of outreach efforts and to understand stakeholder perceptions of contaminated sediment remediation was conducted. This study is a phase two investigation that follows a phase one scoping exercise to establish baseline information on outreach and stakeholder perceptions, which was reported in McCoy & Morgan (2012). Interviews were performed with 20 residents of the Sheboygan River AOC. Qualitative content analysis was run on the interview transcripts to derive major themes from the data. Through this analysis, five key findings and outreach implications were revealed. 1) Significant improvements to recreation and perception have been observed – outreach should highlight these benefits to show how the river has improved. 2) Major economic impacts have not yet been observed but are expected to occur in time – outreach should emphasize that some economic benefits take time, so that when change does occur, the community attributes it to the cleanup work. 3) Benefits to fish and wildlife are predicted, but there is uncertainty as to when the impacts will be realized – outreach should provide basic information on the current scientific understanding of the relationship between sediment remediation and the health of fish and wildlife populations. 4) Much of the change that took place was not visible, and momentum is needed to keep the river clean and address emerging threats – outreach should remind the public how the river has changed and promote stewardship to maintain cleanliness while communicating the health of the river and appropriate use of it. 5) A mixed media approach is most effective for raising public awareness about remediation and restoration – an outreach approach that combines local media, information at public areas, and exclusive mailings will be most effective for reaching a diverse public. Findings will be used to inform future outreach efforts at Great Lakes AOCs, including Sheboygan River, and to further our understanding of the short- and long-term benefits of sediment remediation.

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## INTRODUCTION

The industrial past of the Great Lakes and its tributaries has left behind a legacy of contamination. To prioritize the most severely contaminated areas for cleanup, the International Joint Commission established a list of these places, calling them Areas of Concern (AOCs). In 2002, Congress enacted the Great Lakes Legacy Act (GLLA), a collaborative program to expedite sediment remediation in AOCs, and reauthorized it in 2008. To address remaining Great Lakes needs, such as monitoring and habitat restoration, the Great Lakes Restoration Initiative (GLRI) was established in 2010. In partnership with state, local, and private entities the U.S. Environmental Protection Agency (EPA) is undertaking remediation and restoration activities to remove AOCs from the list of impacted sites.

In 1987, the Sheboygan River AOC was designated as the lower 14 miles of the river and harbor. The river flows into Lake Michigan and is located midway up the coast of Wisconsin. The river has been heavily used since the early 1800s, but uses have changed over time. Once playing an important role in shipping and manufacturing for hundreds of industries along the river, it is now a community resource for recreation and a thoroughfare for boating on the lake. The river has a long history of pollution, as industrial waste was discharged for more than a century before modern environmental regulations. In spite of its impairments, locals continue to identify strongly with the river; boat launches, parks, recreation-based businesses and restaurants line its shores.

Several projects were undertaken to remediate and restore the river in an effort to “delist” the AOC. From 2011 to 2013, GLLA, GLRI, and Superfund completed dredging projects to remove about 400,000 cubic yards of contaminated sediment containing polychlorinated biphenyls and polyaromatic hydrocarbons from the river (EPA, 2013). Habitat was restored at several public locations along the river, including Kiwanis Park, Wildwood Island, and the intersection of Taylor Drive and Indiana Avenue in Sheboygan. The 80 million dollar effort was funded by a team of partners, including EPA,

the Wisconsin Department of Natural Resources, Sheboygan County, the City of Sheboygan, Pollution Risk Services, and Wisconsin Public Service. The University of Wisconsin-Extension and Illinois-Indiana Sea Grant worked with the partners to develop an extensive community outreach campaign.

### **Previous Research**

A phase one scoping exercise was conducted in 2011 to gain a baseline understanding of community perceptions of the benefits of sediment remediation and outreach needs (McCoy & Morgan, 2012). The research helped local outreach partners understand that the Sheboygan River was seen as an asset, but it had a negative stigma. Remediation was expected to diminish the stigmatization, produce economic revitalization, and improve aesthetics and quality of life. Increasing river depth was the primary interest of many interviewees. They held mixed opinions about how the remediation would affect fish consumption advisories and the health of fish populations.

Because of the community-oriented nature of the GLLA and GLRI programs, it is important to understand the impacts for local stakeholders (SedPAC, 1999). A limited yet vital body of research exists that attempts to quantify the economic benefits of sediment remediation at this and other AOCs (Braden, Patunru, Chattopadhyay, & Mays, 2004; Braden et al., 2008a; Braden et al., 2008b; McMillen, 2003). However, we were unable to find any qualitative research on this subject that held direct implications for outreach at this site, as remediation of contaminated sediment has only recently become a reality (Deweese & Schaefer, 2001). Contaminated sediment is an “invisible” problem and largely went unnoticed for decades by both scientific and local communities in the early 1900s.

### **Purpose**

This paper reports on phase two of an ongoing study to understand community perceptions of sediment remediation in the Sheboygan River AOC. Phase two was conducted following the completion of the ecological work performed on the river to: 1) understand community knowledge of and attitudes toward the river and the recent work, 2) understand short- and long-term impacts of the

work on the community, and 3) evaluate the effectiveness of outreach.

## **METHODS**

### **Procedure**

The methods of this study correspond closely with those outlined in the phase one report (McCoy & Morgan, 2012). Accordingly, phase two was conducted with stakeholders in the Sheboygan River AOC. The study sample was comprised of phase one interviewees who agreed to participate in the follow-up and new participants recruited through recommendations from the Sheboygan River Outreach Team. Participants were drawn from a variety of stakeholder groups, including city officials, residents, boaters, anglers, other recreationalists, riverfront business owners and employees, historians, and conservationists. In the summer of 2013, qualitative interviews were conducted with 20 such residents to gain a rich understanding of local knowledge, values, and attitudes toward the AOC. The findings of this study are not meant to be generalized to the entire population but rather to provide a detailed understanding of the perceptions of a variety of river stakeholders.

The interviews were conducted in person and included 12 semi-structured questions about the river (see appendix). In contrast to phase one, the researchers excluded prompts for interviewees to distinguish between present and future tense as they had confused the respondents. Interviews lasted between 30 minutes to an hour and were audio recorded with permission. The researchers took notes during the interviews and transcribed the recordings shortly after they took place.

### **Data Analysis**

Content analysis was performed on the transcripts. Each researcher thoroughly read through all transcripts, highlighted relevant text, and created codes. Phase one codes loosely guided the analysis, with incorporation of new codes where appropriate (Hsieh & Shannon, 2005). Codes were then organized and combined into five distinct themes. Following individual analyses, the researchers met to compare results and consolidate their findings.



## FINDINGS AND IMPLICATIONS

**Finding # 1: Satisfaction with the remediation and restoration is high. Now that the Sheboygan River is cleaner and deeper, significant improvements to recreation and the perception of the river have been observed.**

The recent remediation and restoration activities were viewed favorably by interviewees. Despite short-term inconveniences, they consistently expressed their overall appreciation for the river work and are excited it has taken place. There is general agreement that the projects have had a positive effect on the local community. (I = Interviewee quote)

I<sub>1</sub>: I think people in the community rallied around the fact that the dredging was going to occur, and it was nothing but positive.

I<sub>2</sub>: From the planning maps that I was shown for the restoration work, I was very impressed at the variety of habitats that were being restored.

When asked to describe remediation and restoration of the river, interviewees almost unanimously talked about how dredging affected depth and cleanliness; the river is now cleaner and deeper. Most of the dredging occurred downtown in a high visibility area. A few interviewees spoke about the upstream habitat restoration, but the focus for most was dredging.

I<sub>3</sub>: I think it's a benefit for the town because any time you clean anything up, it's good... they said they were trying to make it deeper and cleaner.

I<sub>4</sub>: What that enhanced the most was it decontaminated the water, but it also deepened the channel.

Dredging has been restricted in the Sheboygan River since the 1970s because of contaminated sediment; this limited the activities that could take place on the river, where restaurants and riverfront businesses are located. The increased depth of the river has opened the community to new opportunities and enhanced river use. Many interviewees saw the change in depth, with improved navigability and the ability for bigger boats to now access the harbor and parts of the river, as the largest benefit of the dredging project.

I<sub>5</sub>: Just last week I was driving to the Sheboygan Harbor, where the Blue Harbor is, and there were three very big

long yachts that were there, which they said they could've not gotten in there without the completion of the dredging.

Along with depth, a cleaner river has improved the overall perception of the river, with increases to quality of life and a sense of safety. While interviewees in phase one described the river having a stigma, phase two interviewees are proud of their river. They connected better quality of life with living near a clean river with expanded opportunities for recreation and new uses. The removal of contamination has led to a greater sense of safety in regards to the river, especially for recreation.

I<sub>6</sub>: Anytime you have a healthy river going through a community, you have a better quality of life.

I<sub>7</sub>: I do feel safer than my friends, that canoe and kayak. I don't know how much that would have hurt them if they fell in and any of those things got on them.

### *Outreach Implications*

- Cleanliness and depth were consistently advertised in outreach messaging throughout the duration of the river work as the primary effects of the dredging and restoration. These are two intuitively simple concepts that stakeholders successfully understood. This reaffirms the value of simple, clear messaging.
- Because stakeholders are not as familiar with the habitat restoration work, they might have a harder time understanding its benefits and how it impacts river health. More outreach on this will help.
- With a majority of stakeholders recognizing improvements to recreation and the perception of the river as a reality, these benefits can be highlighted in outreach explaining how the river has improved.

### **Finding # 2: Significant economic impacts have not yet been observed but should occur in time.**

Interviewees reported that they had not yet observed significant impacts to the larger economy but believe they will over time. Interviewees often used future tense to describe changes to the economy. This lag in economic benefit realization may be because changes to river cleanliness and depth indirectly impact economic aspects; changes in economic aspects may depend on intermediary impacts. For example, the community has already seen improvements to recreation and the overall perception of the river because of depth and cleanliness. Yet, it may take time for enhancements to boating, recreation, quality of life, and sense of safety to serve as a catalyst to improve economic

aspects, such as property values, tourism, and redevelopment.

I<sub>8</sub>: I think the increased water depth will also help increase the economy and its use. Like I said, we're now able to take larger boats and vessels such as yachts and tall schooner ships that were unable to access our river before.

One interviewee was able to provide an example of a riverfront redevelopment project made possible by the river work; other interviewees expect more redevelopment projects to come.

I<sub>9</sub>: We actually have a business that just opened on the river by Kiwanis Park. A new coffee shop, and Celcom dealer; it's on the corner by the 14<sup>th</sup> Street Bridge... They always wanted river access and river views and, when the river dredging project was underway, I think that was the piece that really sold them on the fact that the river's being cleaned up. It's becoming more useable.

### *Outreach Implications*

- Outreach should emphasize that not all impacts will be immediately realized, so that the public knows what to expect. Some impacts, especially economic ones, may take years. Outreach recognizing this lag time will help people connect economic improvements to the river work when the time finally comes.

### **Finding # 3: Benefits to fish and wildlife are predicted, but there is uncertainty as to when the impacts will actually be realized.**

There is general agreement that a cleaner Sheboygan River with better habitat will improve fish and wildlife populations. However, interviewees had mixed views as to when populations would be impacted. Most said that they had not yet observed significant improvements. Some believe it has already impacted fish and wildlife but did not give specific examples. Some said it will take time for impacts to occur. Two interviewees described the time it takes for contamination to decrease in a fish or wildlife population, with additional time needed to monitor and communicate changes to the public.

I<sub>10</sub>: I think that we're going to start seeing frogs and toads and other animals returning, maybe even things like otters, and what else lives on the river? Minks, all kinds of birds of course and shore birds or water fowl. Maybe we'll get wood ducks.

I<sub>11</sub>: And the fish itself eventually...you really want the fish to be as safe as humanly possible. And we'll have that over time.

I<sub>12</sub>: And I think going forward, I think with some more positive outreach, that and removing fish consumption advisories definitely will bring those people back to say, “You know what? Let's go fishing along the river.”

One person thought they had noticed more fishing in a stretch that is not commonly fished, and another person thought that they had noticed more birds along the river. Many interviewees also described the value of charter fishing on the lake and fishing on the river during salmon runs. A few even thought the cleanup and restoration may positively benefit those activities. Alternatively, a couple interviewees said that they still thought of the fish as “dirty” even after the cleanup work.

I<sub>13</sub>: Well, it will obviously increase the wildlife, and it will increase fishing too.... And fishing, we get a lot of tourists in for fishing. In the fall, when the lake warms up a little bit, the salmon move in closer, and we get whole busloads of guys from Minnesota of all places!

### *Outreach Implications*

- The scientific relationship of sediment, habitat, and fish, including the ecological time of fish population recovery, is difficult for even engaged stakeholders to understand. While research is limited, science does show that sediment remediation positively impacts fish. Outreach should promote this but acknowledge that it may take years to take effect. Providing examples of regional research where fish populations have improved may help communicate to the public.

**Finding # 4: Because most of the change that occurred is under water, the public may forget about the cleanup efforts. Momentum is needed to help the river heal by keeping it clean and addressing emerging threats.**

Most interviewees believe that the overall aesthetics of the river have not changed. The dredging did little to change the appearance of the river, and habitat restoration is small in scale. Many think that the downtown riverfront is already aesthetically pleasing. A couple interviewees suggested that redevelopment could lead to improved aesthetics.

I<sub>14</sub>: The aesthetics of where it was dredged, I would say it's still the same. I think what'll happen is, as things develop along there, it will be improved.

Without visible aesthetic improvements to remind the community of the cleanup and

restoration, interviewees are concerned that the larger community may forget entirely about the river cleanup. Without this constant reminder, interviewees are concerned about the community's ability to keep it clean. Some interviewees described the public's apathy or inability to appreciate the river work as the biggest threat. With the completion of the projects of the last couple years, it is important to maintain momentum. The community can help the river heal through acts of stewardship, such as reducing the amount of fertilizer used on lawns and refraining from littering. While the dredging and habitat restoration has addressed the problem of industrial legacy pollution, the community has new threats to face, such as agricultural and stormwater runoff. Public support is needed for future investments into the environmental health of the river.

I<sub>15</sub>: I would say the biggest threat would be the people themselves. Now that they've cleaned it, we've got to do a conscious job of maintaining that and keeping the river clean and keeping it a source for recreation and enjoyment for future generations.

I<sub>16</sub>: I think the problems will probably be more of a perception that people have stayed away from the river for so long... There will be a tendency for people to throw things where they shouldn't ... There's still a lot of runoff that will come into the river. You're not going to get rid of the phosphorous by the project that happened, and people will dump their grass cuttings into the river. People will continue to use fertilizer more than they probably should.

### *Outreach Implications*

- Similar to the problem of contaminated sediment, the remedy of dredging creates a largely “invisible” change. As time passes the public will need to be reminded that the cleanup work took place. Outreach should tell the story of what the river was and how it has changed. This outreach can be framed around stewardship to help promote wise use of the river and keep it clean. For example, park visitors should be reminded to be careful around new vegetation so that new habitat can become established.
- Despite cleanup efforts, the river will take time to heal. As it heals, emerging threats like runoff may impact the river. Outreach should communicate what a “cleaner” river means. For instance, a cleaner river does not necessarily mean it is swimmable as remaining problems like runoff can affect safety.

**Finding # 5: An outreach approach that includes a mix of media is best for increasing public awareness about river remediation and restoration.**

The average interviewee was moderately informed about the river remediation and restoration. In addition to describing impacts of the cleanup work, some provided specific project information, such as the schedule, the collaborative efforts, and types of sediment contaminants. Half the interviewees were involved or knew someone involved in the project work, which is how they got most of their information. Other commonly cited sources of information include a mix of targeted stakeholder mailings (e.g., emails, University of Wisconsin-Extension newsletters, and mailed letters from the city), local media (e.g., newspaper), public meetings hosted by EPA and its partners, and information posted in public places (e.g., exhibit panels posted along the downtown riverfront boardwalk).

I<sub>17</sub>: There were presentations about the status fairly regularly at different places in the city. You could come to one of the parks and get information at another time. And we received that information through newspaper.

I<sub>18</sub>: Oh, I got letters, but mostly we've gotten to be friends with the dredgers.

When asked about the best way to inform the larger river community about the remediation and restoration, almost every interviewee described multiple media types. A third of the interviewees said that a mixed approach was essential because certain types of media appeal to different people.

I<sub>19</sub>: I think you're going to have to have a multiple approach. I think you're going to have to use all available free media to your advantage. So, lots of newspaper coverage...Billboards could probably be used to get high visibility.

Facebook, a link on the city's webpage...

Local media was most commonly mentioned, with over half the respondents suggesting that future outreach include the local newspaper. They stated that even with reduced subscriptions, many people still received the newspaper or went online to view the recent headlines. Public meetings and publicly posted information were described as good information outlets for the public. There was less emphasis on targeted stakeholder mailings. Even though no one described social media as a way they received information on this project, a third of the interviewees recommended it as an idea for outreach to the

public. Finally, a few interviewees were hesitant to offer ideas for future outreach, saying that it is the nature of the public not to care about such projects. Most people will not pay attention and will be ill-informed, no matter how extensive the outreach plan is.

I<sub>20</sub>: People nowadays, they're clueless... How on Earth you get Americans to pay attention to worthwhile things happening and to get involved in the community, that's just, I don't know how you do it... How do you get the public to wake up and take pride in the community and improve the quality of life?

### *Outreach Implications*

- Each media form has advantages and disadvantages; different forms appeal to different demographics. Using a combined approach will help messages reach multiple audiences.
- Local media is a popular form of outreach that reaches the public. For rivers with heavy downtown pedestrian traffic like Sheboygan River, onsite outreach in the form of exhibit panels works well too. Both approaches reach a public seeking more information that may not necessarily know how to find it.
- Exclusive mailings are good for sharing detailed information with vested stakeholders. People self-select to receive the information, meaning they are more likely to already know general information; they seek specific details and involvement opportunities.

## **CONCLUSION**

A qualitative analysis of community perceptions of sediment remediation, the Sheboygan River, and outreach programming was performed following the completion of remediation and habitat restoration in the AOC. The study revealed five key findings and outreach implications. Within one year of the work being completed, stakeholders have already experienced benefits like improved recreation and perception of the river; they anticipate benefits to fish and wildlife and the economy in the future. While most of the change to the river is under water, and therefore not visible, a mixed outreach approach will help keep momentum high. This report illustrates the importance of including education and outreach as an integral project component before, during, and after the remediation and restoration process. The findings of this study will guide future outreach at the Sheboygan River AOC to promote

appreciation and understanding of the cleanup and restoration and to encourage appropriate use of the river. Findings may also be applied to other AOCs that share similar qualities with Sheboygan. Finally, this report helps demonstrate the importance of programs like GLLA and GLRI for local communities in terms of the benefits they bestow through restoration and remediation.

## **BIBLIOGRAPHY**

- Braden, J. B., Patunru, A. A., Chattopadhyay, S., & Mays, N. (2004). Contaminant cleanup in the Waukegan Harbor Area of Concern: Homeowner attitudes and economic benefits. *Journal of Great Lakes Restoration*, 30(4): 474-491.
- Braden, J. B., Taylor, L. O., Won, D., Mays, N., Cangelosi, A., & Patunru, A. A. (2008a). Economic benefits of remediating the Buffalo River, New York Area of Concern. *Journal of Great Lakes Restoration*, 34: 631-648.
- Braden, J. B., Won, D., Taylor, L. O., Mays, N., Cangelosi, A., & Patunru, A. A. (2008b). Economic benefits of remediating the Sheboygan River, Wisconsin Area of Concern. *Journal of Great Lakes Restoration*, 34: 649-660.
- Deweese, D. N., & Schaefer, K. A. (2001). Identifying and assessing the economic benefits of contaminated aquatic sediment cleanup. *Water Quality Research Journal of Canada*, 36(3): 413-433.
- Hsieh, H., & Shannon, S. E. (2005). Three approaches to qualitative content analysis. *Qualitative Health Research*, 15(9): 1277-1288.
- McCoy, C., & Morgan, A. (2012). A scoping exercise to understand community perceptions of contaminated sediment remediation in the Sheboygan River Area of Concern. Retrieved from Illinois-Indiana Sea Grant website:  
[http://www.iisgcp.org/catalog/downloads\\_09/Sheboygan%20Case%20Study%20FINAL%20w%20coer.pdf](http://www.iisgcp.org/catalog/downloads_09/Sheboygan%20Case%20Study%20FINAL%20w%20coer.pdf)



McMillen, D. P. (2003). Economic benefits of the Grand Calumet River dredging plan:

Evidence from the Gary housing market. Report to the Delta Institute, Chicago.

SedPAC. (1999). Ecological benefits of contaminated sediment remediation in the Great Lakes Basin.

Sediment Priority Action Committee, Great Lakes Water Quality Board, International Joint Commission.

United State Environmental Protection Agency. (2013). *Sheboygan River Area of Concern*. Retrieved from <http://www.epa.gov/greatlakes/aoc/sheboygan/>

## APPENDIX

### Interview Questions

1. Tell me about the Sheboygan River.
2. What do you use the river for? How often?
3. What do you value the most about the river?
4. What are the biggest problems/threats currently facing the river?
5. Tell me what you know about the remediation and restoration.
6. What changed the most as a result of the remediation and restoration?
7. Now I'm going to name some aspects of the river. Think of these aspects before the remediation and restoration and tell us how each aspect has changed or not changed because of the work.
  - a. Aesthetics (or beauty) of river
  - b. River's effect on quality of life
  - c. River's effect on property values
  - d. A place for fish and wildlife to live and grow
  - e. Water depth
  - f. River's effect on the local economy and likeliness of new development

### Outreach

8. Have you received any information regarding remediation and restoration activities on the river? Where did you receive the information? Was it easy to understand?
9. What is the best way for the community to be informed about remediation and restoration activities?

### Final Qs

10. Any suggestions on whom else I should talk to?
11. Is there anything else you'd like to say about the river or the local remediation and restoration?
12. Is there anything else you'd like to know about the Sheboygan River dredging or habitat work?