



AT THE EDGE OF THE CITY AND
THE HEART OF EVERYTHING

Press Release – September 14, 2011

Village of Shorewood, Wisconsin

For more information contact:

Village Manager Chris Swartz, 414.847.2701

Survey: Majority of Property Owners Support Comprehensive Sewer Plan and Funding Proposal

Shorewood, Wisc. – According to the results of a Village-wide survey, 78% of Shorewood property owners are either very or somewhat supportive of the Village implementing its comprehensive sanitary sewer and stormwater improvement plan. A majority (55%) of respondents also indicated support for the Village's proposed plan for financing the 10-year, \$34.4 million program.

The Village sent out the survey to all property owners in July. A total of 1,295 property owners responded for an effective response rate of 39.5% and an error estimate of $\pm 2.2\%$. The purpose of the survey was to gather feedback on a proposed plan for funding the projects outlined in the Comprehensive Sanitary Sewer, Stormwater and Drainage Facility Plan.

The proposal for funding the \$34.4 million program utilizes a mixture of funding sources, including property taxes, sanitary sewer utility user fees, a newly created stormwater utility fund and Milwaukee Metropolitan Sewerage District Grants. Under the plan, property owners would expect phased increases to their property tax bills and sewer related user fees, with a peak repayment year in 2025.

According to the survey results:

- Nearly two-thirds of property owners are either very or somewhat concerned about basement back-ups.
- When asked their preference about using property taxes, user fees or a combination of both to fund sewer projects, the most popular option was to use a mixture of both (45%).
- A majority of property owners (58%) also agreed with the proposed plan when it comes to not using special assessments to fund sewer projects.
- Thirty-four percent (34%) favor the current 10-year construction timeline, while 37% prefer a longer construction period and 12% prefer a shorter period of construction.

A special meeting will be scheduled in November to discuss the survey results and for the Village Board to possibly finalize a funding plan. Engineering for initial sewer projects is already underway and construction of certain projects could begin in Spring 2012. The Village also began implementing stormwater system improvements as part of the 2011 Downer Avenue pavement reconstruction program.

More information about the Village of Shorewood's Comprehensive Sanitary Sewer, Stormwater and Drainage Facility Plan is available at www.villageofshorewood.org/sewer.

Village of Shorewood:
*2011 Comprehensive Sanitary Sewer and Stormwater
Drainage Facility Plan Survey*

Final Results Report

September 2011

Prepared by John Kovari and G. Scott Davis

Acknowledgements: CUIR would like to thank the Village of Shorewood Board of Trustees, Mike Hawes, Chris Swartz, and the residents of Shorewood for their cooperation, feedback, and support in generating this report.

Introduction

Due to the street flooding and basement back-ups that occurred during the July 2010 rain storms and during other storms of recent years, the Village of Shorewood began planning for a Comprehensive Sanitary Sewer and Stormwater Drainage Facility Plan. The plan outlines a 10-year, \$34.4 million program for making improvements to sanitary sewer pipes, stormwater collection systems, combined sewer pipes and private property laterals.

As a part of the implementation of the facility plan, the Village of Shorewood contracted with the University of Wisconsin-Milwaukee's Center for Urban Initiatives and Research (CUIR) to collect feedback from Shorewood property owners about the plan. CUIR assisted with the development of the survey, coordinated the printing and distribution of the survey, conducted the analysis of the results, and prepared this report.

Every property owner in the Village of Shorewood received a copy of the survey. The cover letter and survey instrument can be found in Appendices A and B. Surveys were collected from July 25 through August 21, 2011. Of the 3,603 property owners, a total of 1,295 property owners responded for an effective response rate of 39.5% and an error estimate of $\pm 2.2\%$.

The following section outlines the official results from the survey.

Results

Concern about Basement Back-ups

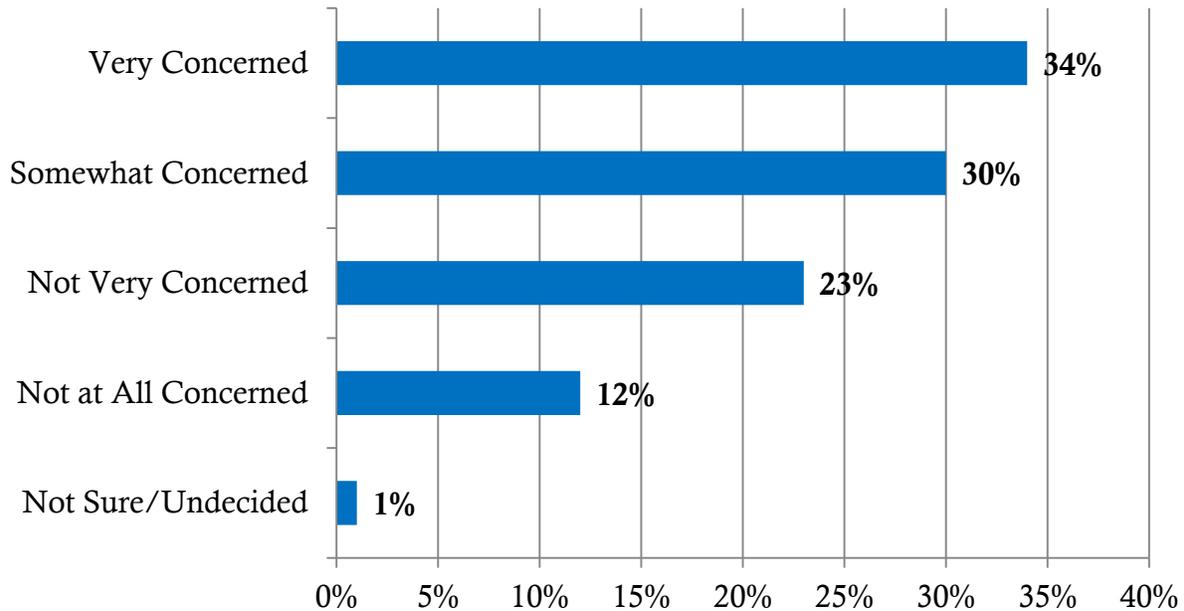
The survey asked residents, “How concerned are you with the potential for basement back-ups in your property?” Respondents could choose between the following options: very, somewhat, not very, or not at all concerned. Not sure/undecided was another potential response.

Sixty-four percent of respondents are very or somewhat concerned about the potential for basement back-ups on their property. Twenty-three percent are not very concerned, and only 12% are not at all concerned. One percent indicated that they were not sure or undecided. See Table 1 and Figure 1 below.

Table 1. Concern about Back-ups at Their Property

Response	Frequency	Percent¹
Very Concerned	444	34%
Somewhat Concerned	389	30%
Not Very Concerned	302	23%
Not at All Concerned	148	12%
Not Sure/Undecided	9	1%
Total	1,292	100%

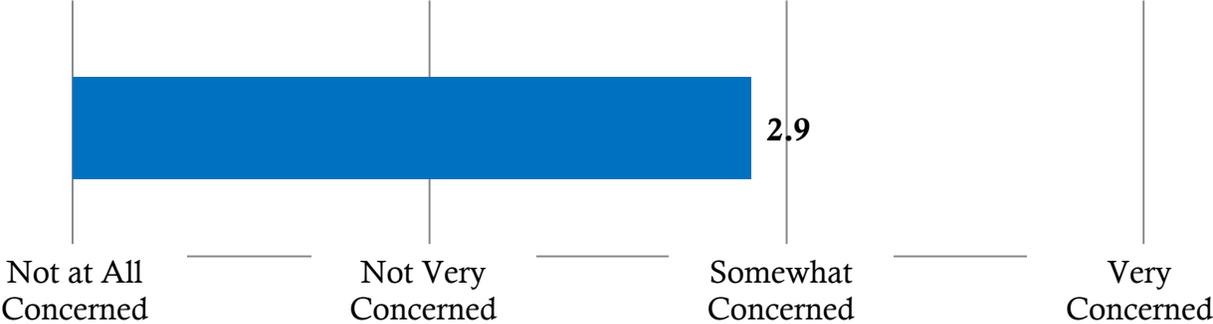
Figure 1. Concern about Back-ups at Their Property



¹ Column percentage totals may not always equal 100% due to rounding.

Another way to present the results is through use of a mean score (average).² Responses were converted to numerical values as follows: very concerned = 4; somewhat concerned = 3; not very concerned = 2; and not at all concerned = 1. As seen in Figure 2, the mean level of concern about basement backs was 2.9 – this is near the level of somewhat concerned.

Figure 2. Mean Concern about Basement Back-ups



² For this report, not sure/undecided responses are excluded from mean score calculations.

Support for Implementation of a Comprehensive Sewer Improvement Plan.

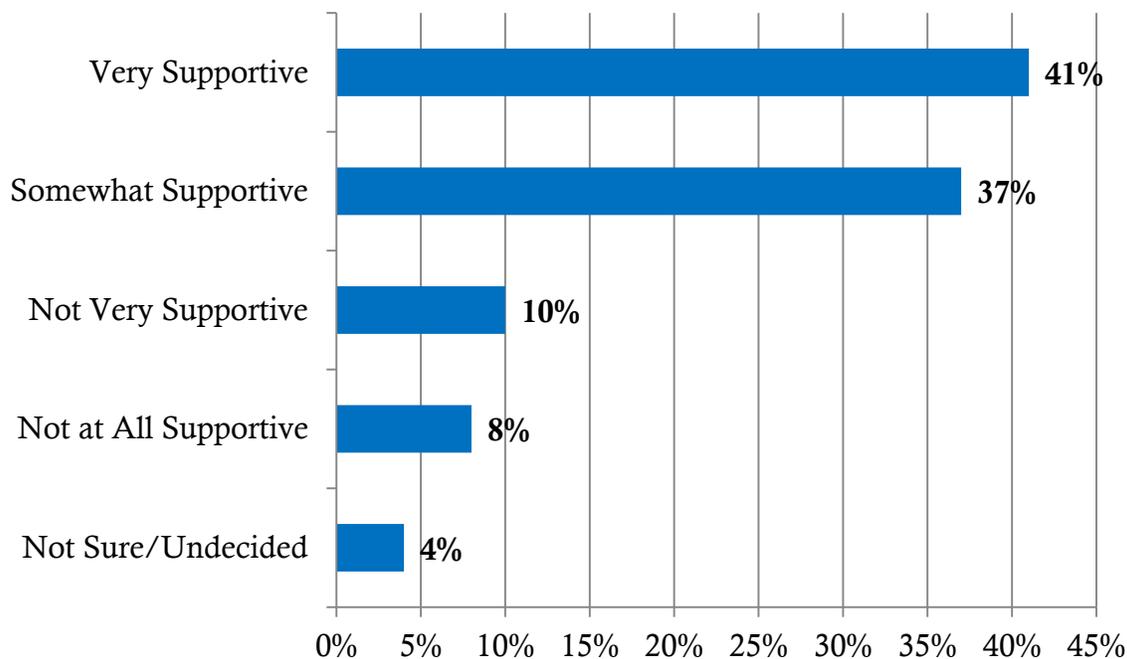
The survey asked: “*In general, how would you describe your level of support for the Village implementing a comprehensive sewer improvement plan?*” Responses ranged from very supportive to not at all supportive; not sure/undecided was another option.

As seen in Table 2 and Figure 3, over three quarters of respondents (78%) are either very or somewhat supportive of the Village implementing a comprehensive sewer improvement plan. Eighteen percent are either not very or not at all supportive, and 4% were not sure/undecided.

Table 2. Support for Comprehensive Sewer Improvement Plan

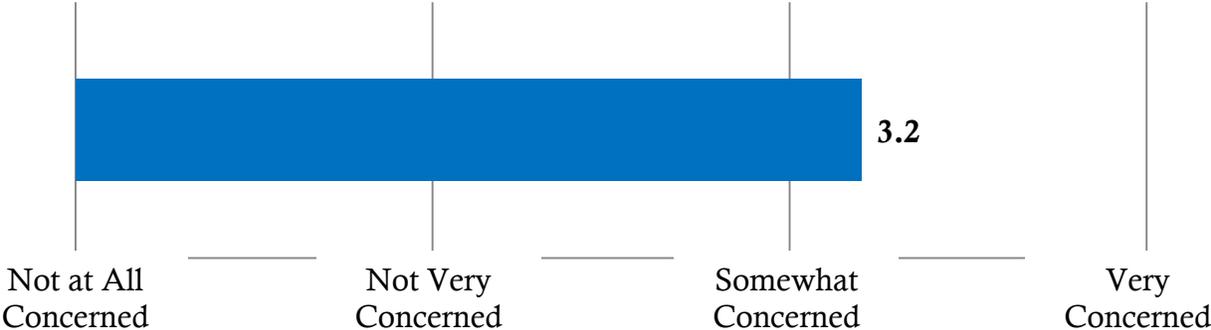
Response	Frequency	Percent
Very Supportive	532	41%
Somewhat Supportive	472	37%
Not Very Supportive	130	10%
Not at All Supportive	103	8%
Not Sure/Undecided	49	4%
Total	1,286	100%

Figure 3. Support for Comprehensive Sewer Improvement Plan



Responses were converted to numerical values to obtain a mean score, as follows: very supportive = 4; somewhat supportive = 3; not very supportive = 2; and not at all supportive = 1. As seen in Figure 4, the mean level of support for implementation of a comprehensive sewer improvement plan was 3.2, just above that of somewhat supportive.

Figure 4. Mean Support for Implementation of a Comprehensive Sewer Improvement Plan



Support for Current Funding Plan

The next question on the survey asked respondents for their support for the funding plan. The question read as follows:

“The Village is currently proposing a 10-year plan for completing sanitary and storm sewer improvements. The estimated cost of all the projects is \$34.4 million.

Under the current proposal, the property owner could expect phased increases to their property tax bill, sewer bill and stormwater utility bill.

- *By 2015, the owner of a home assessed at \$300,000 could expect to pay \$303 more in property taxes and user fees than in 2011 due to proposed sewer improvements.*
- *By 2021, the owner could expect to pay \$612 more than in 2011.*
- *In the peak year 2025, the owner could pay \$667 more than in 2011.*

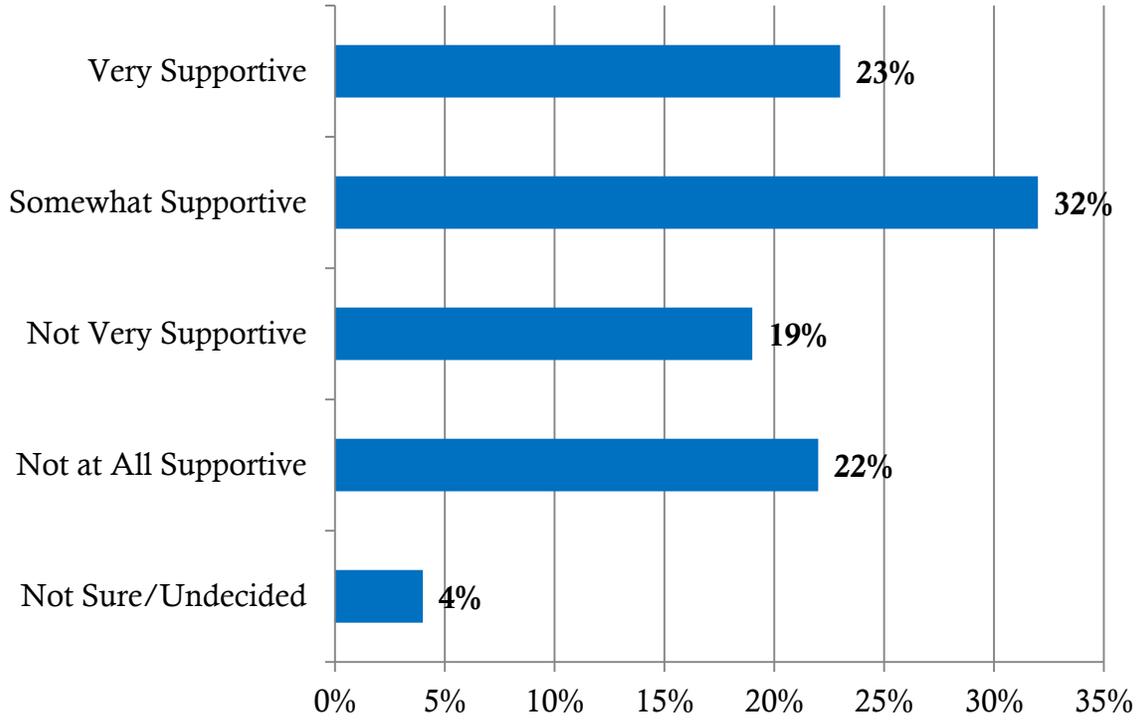
How supportive are you of this funding plan?”

Table 3 and Figure 5 present the full results of this question. A majority of residents (55%) indicated that they were very or somewhat supportive of this funding plan. Forty-three percent indicated that they were not very or not at all supportive, and four percent were not sure/undecided.

Table 3. Support for Proposed Funding Plan

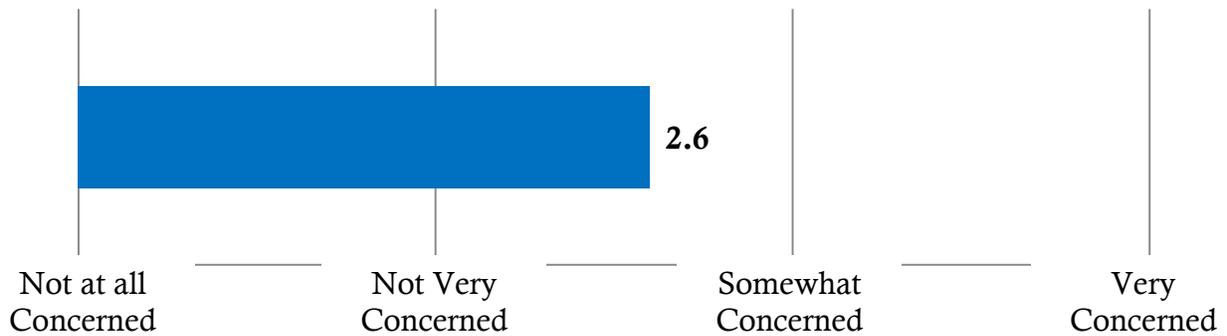
Response	Frequency	Percent
Very Supportive	294	23%
Somewhat Supportive	407	32%
Not Very Supportive	238	19%
Not at All Supportive	283	22%
Not Sure/Undecided	50	4%
Total	1,272	100%

Figure 5. Support for Proposed Funding Plan



Responses were converted to numerical values to obtain a mean score, as follows: very supportive = 4; somewhat supportive = 3; not very supportive = 2; and not at all c supportive = 1. As seen in Figure 6 on the following page, the mean level of support for the proposed funding plan was 2.6, between the levels of not very and somewhat supportive.

Figure 6. Mean Support for the Current Funding Plan



Preferred Funding Method

The next question focuses on which funding method is preferred most by residents.

“The Village currently administers a sanitary sewer utility fund and assesses a quarterly user fee to property owners based on usage. Under the current proposal for funding storm sewer improvements, the Village would also establish a stormwater utility fund and assess an additional user fee. This new utility fund would be used to finance storm sewer related improvements.

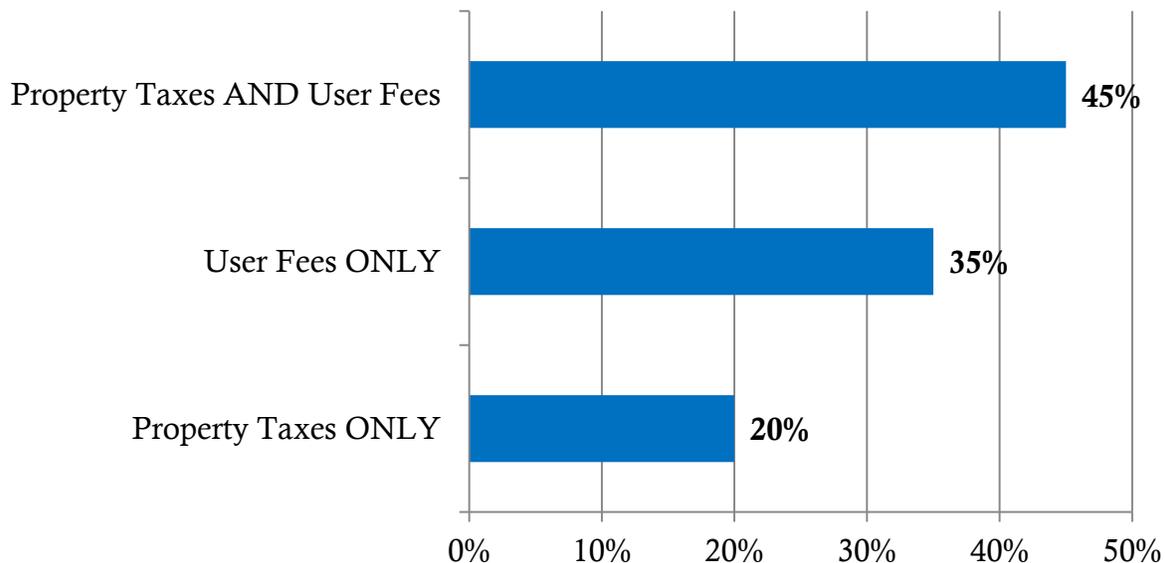
“Which method would you prefer for funding the storm sewer related projects?”

Full results are provided in Table 4 and Figure 7, which show that there is no clear majority among the three options. Twenty percent of respondents chose property taxes only, while 35% chose user fees only. The option chosen by the highest percentage of respondents was the property taxes and user fees option (45%).

Table 4. Preferred Funding Method

Response	Frequency	Percent
Property Taxes ONLY	241	20%
User Fees ONLY	428	35%
Property Taxes AND User Fees	552	45%
Total	1,221	100%

Figure 7. Respondents' Preferred Funding Method



Support for Special Assessments

The next survey question asked the following: “The Village of Shorewood infrequently uses special assessments to fund capital projects. The concept of a special assessment involves charging a fee to property owners for public projects that receive a direct and unique benefit from the projects (typically used by municipalities to fund street, utility or sidewalk improvements).

“In line with the Village’s past practices, the current proposal does not include special assessment as a mechanism for funding the sewer improvements. Alternatively, the Village could fund certain projects by charging a special assessment to owners of property located in the immediate vicinity of the sewer improvements. As a result, the Village would require less funding from property taxes and user fees.

How supportive are you of the use of special assessments to fund sewer improvements?”

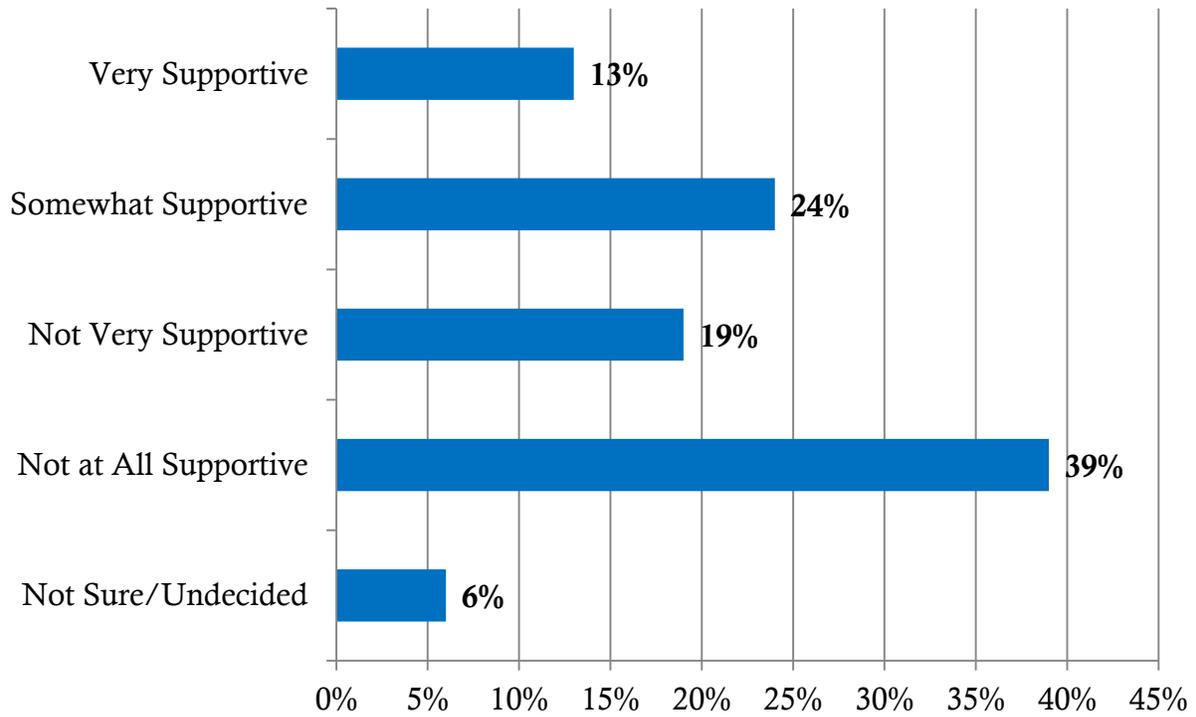
Survey results are listed in Table 5 and Figure 8 (next page). A majority of residents (58%) are not very or not at all supportive of using special assessments to fund sewer improvements. Thirteen percent are very supportive, and nearly one-quarter of the respondents (24%) are somewhat supportive. Six percent were not sure/undecided.

Table 5. Level of Support for Special Assessments

Response	Frequency	Percent³
Very Supportive	166	13%
Somewhat Supportive	305	24%
Not Very Supportive	237	19%
Not at All Supportive	493	39%
Not Sure/Undecided	73	6%
Total	1,274	101%

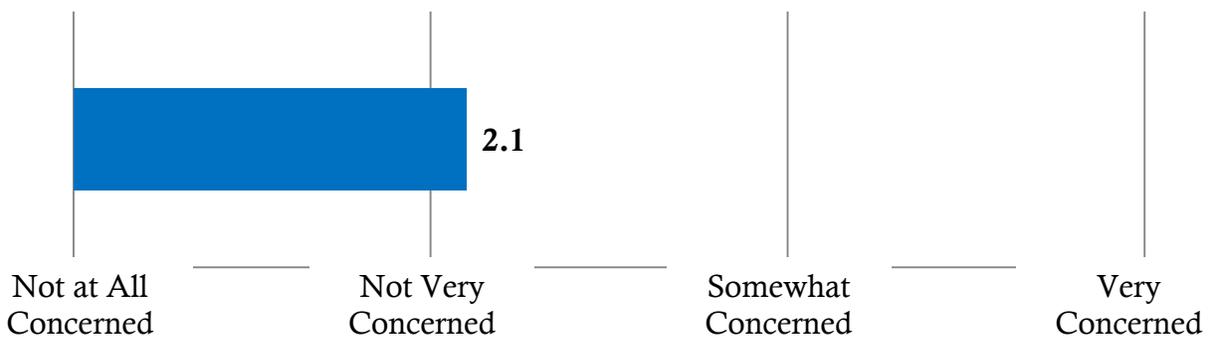
³ Column percentage totals may not always equal 100% due to rounding.

Figure 8. Level of Support for Special Assessments



Responses were converted to numerical values to obtain a mean score, as follows: very supportive = 4; somewhat supportive = 3; not very supportive = 2; and not at all Supportive = 1. As seen in Figure 9 on the following page, the mean level of support for the use of special assessments was 2.1, only slightly above the level of not very supportive.

Figure 9. Mean Support for the Use of Special Assessments



Preferred Funding Timeline

The next question focused on the funding timeline:

“As an alternative to the proposed 10-year program, the Village could implement a shorter-term program at a higher annual cost or a longer-term program at a lower annual cost. The total project costs would be approximately the same under each scenario.

Which of the following concepts do you find most preferable? (Select only one)”

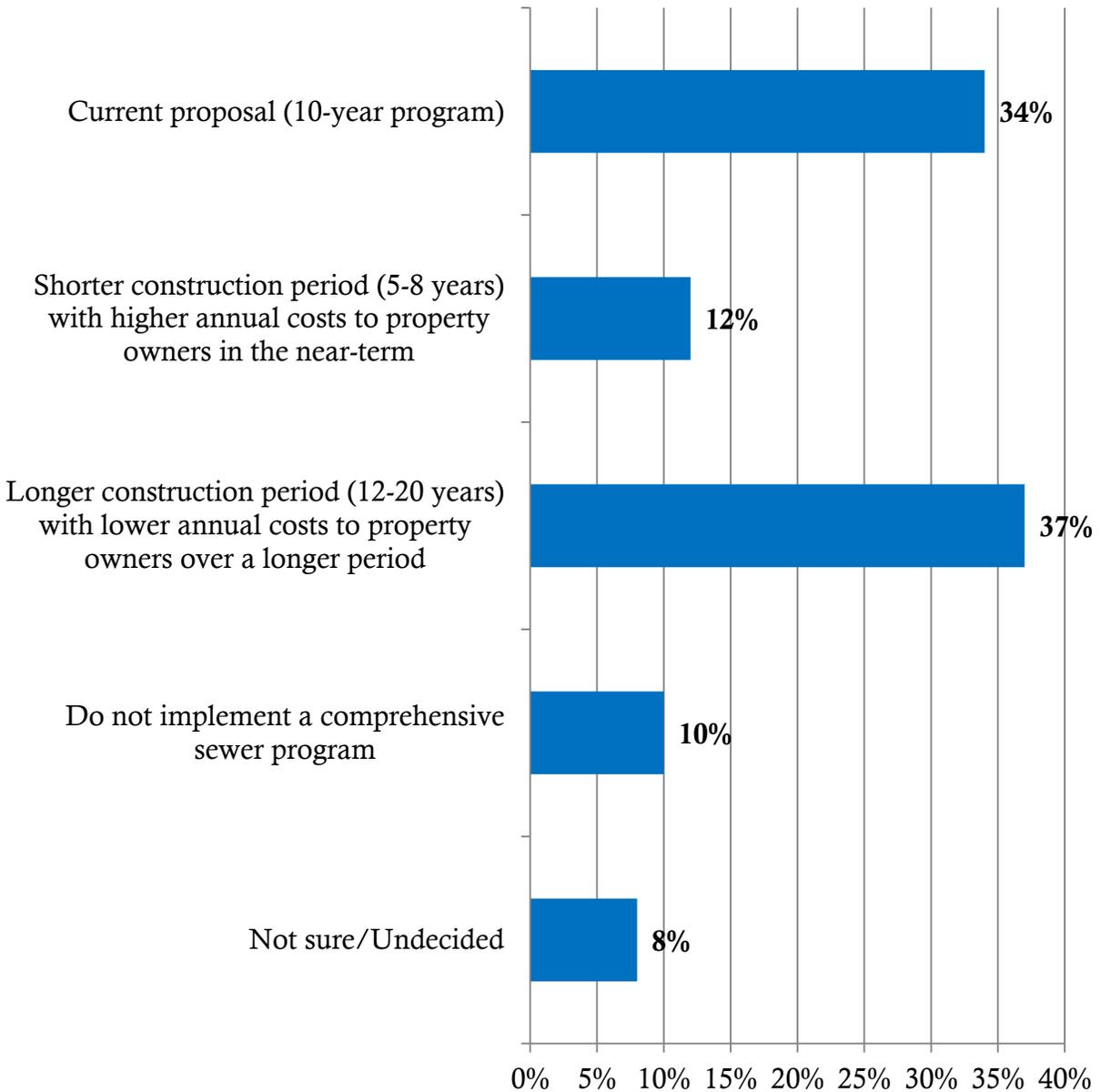
The results for this question are presented in Table 6 and Figure 10 (next page). It reveals that no one option received a majority percentage of respondents. The option receiving the highest frequency was a longer construction period (12-20 years), chosen by 37% of respondents. Thirty-four percent chose the current proposal (10 years). Twelve percent chose a shorter construction period, and 10% percent do not want a comprehensive sewer program to be implemented. Eight percent of residents were not sure/undecided.

Table 6. Preferred Funding Timeline

Response	Frequency	Percent⁴
Current proposal (10-year program)	428	34%
<u>Shorter</u> construction period (5-8 years) with higher annual costs to property owners in the near-term	146	12%
<u>Longer</u> construction period (12-20 years) with lower annual costs to property owners over a longer period	462	37%
Do not implement a comprehensive sewer program	129	10%
Not sure/Undecided	95	8%
Total	1,260	101%

⁴ Column percentage totals may not always equal 100% due to rounding.

Figure 10. Preferred Funding Timeline



Additional Comments

The last survey question left space for comments by respondents. Specifically, it asked: “Do you have any additional comments with regards to funding sewer improvement projects?” All open-ended comments were supplied to the Village of Shorewood in an addendum to this report.

Further Analysis: Differences across Groups

In this report, the differences which might exist across groups are also analyzed. How does the concern for the potential of basement back-ups relate to support for implementation of a sewer improvement plan and the Village’s funding plan? In order to identify any significant differences, a crosstab analysis was conducted, which shows how the percentage of respondents changes with different levels of concern/support.⁵ See Appendix C for an explanation of crosstab analysis.

Comparing Concern about Back-ups with Support for Implementing a Plan

First, we compare questions one and two, looking at how respondents’ concern for back-ups relates with their support for the Village implementing a sewer improvement plan. Table 7 shows that respondents concerned about back-ups are also more likely to be supportive of the Village implementing a sewer improvement plan. For example, 25% of respondents are both very concerned about back-ups and very supportive of implementing a sewer improvement plan. This compares with only 4% of respondents that are not at all concerned as well as not at all supportive.

Table 7. Comparing Concern about Back-ups with Support for Implementing a Plan

		Concern about Basement Back-ups			
		Not at All Concerned	Not Very Concerned	Somewhat Concerned	Very Concerned
Support for Implementation of Sewer Improvement Plan	Not at All Supportive	4%	2%	1%	1%
	Not Very Supportive	3%	5%	2%	1%
	Somewhat Supportive	3%	12%	16%	8%
	Very Supportive	2%	5%	11%	25%

Comparing Concern about Back-ups with Support for the Current Funding Plan

Next, we look at the relationship between questions one and three: how respondents’ concern about back-ups in their properties relates with their support for the Village’s funding plan. Table 8 shows that more concerned respondents are also more likely than those not concerned to support the Village’s funding plan. For example, 15% of respondents are both very concerned about back-ups and very supportive of the funding plan. Conversely, 7% of respondents are both not at all concerned and not at all supportive of the funding plan.

⁵ Crosstab results (chi²) are statistically significant at the p < 0.05 level.

Table 8. Comparing of Concern about Back-ups with Support for the Current Funding Plan

		Concern about Basement Back-ups			
		Not at All Concerned	Not Very Concerned	Somewhat Concerned	Very Concerned
Support for Current Funding Plan	Not at All Supportive	7%	6%	4%	5%
	Not Very Supportive	2%	8%	6%	4%
	Somewhat Supportive	2%	7%	13%	12%
	Very Supportive	1%	3%	6%	15%

Comparing Concern About Back-ups with Support for Special Assessments

Next, we look at the relationship between questions one and five: how respondents’ concern about back-ups in their properties relates with their support for special assessments. Table 9 shows that respondents concerned about back-ups are also less likely to support special assessments. For example, 16% of respondents are both very concerned about back-ups and not at all supportive of special assessments. At the same time, only 2% of respondents are both not at all concerned and very supportive of special assessments.

Table 9. Comparing of Concern About Back-ups with Support for Special Assessments

		Concern about Basement Back-ups			
		Not at All Concerned	Not Very Concerned	Somewhat Concerned	Very Concerned
Support for Special Assessments	Not at All Supportive	5%	9%	10%	16%
	Not Very Supportive	2%	4%	7%	7%
	Somewhat Supportive	2%	6%	9%	7%
	Very Supportive	2%	3%	4%	4%

Conclusions

According to the survey results, a high degree of concern exists among respondents about the potential for basement back-ups in their properties; nearly two-thirds are either very or somewhat concerned about back-ups.

This concern translates into support for the Village implementing a sewer improvement plan and its funding plan. Seventy-eight percent (78%) of respondents are either very or somewhat supportive of the Village implementing a sewer improvement plan, and 55% support the Village's proposed funding plan. Moreover, respondents that are more concerned about back-ups are also more likely to support the Village's implementation of a sewer improvement plan and the proposed funding plan. Respondents concerned about back-ups are also less likely to support special assessments.

The survey also asked several questions about details regarding the funding plan. In terms of using property taxes and/or user fees for the sewer improvements, the most popular option is using a combination of property taxes and user fees (45%). Fifty-eight percent are not very or not at all supportive of using special assessment; only 38% are very or somewhat supportive of special assessments. Lastly, regarding the timeline of the plan, the most popular option was a longer construction period (12-20 years); 37% percent chose this option, and 34% chose the current 10-year proposal.

Appendix A: Cover Letter

**IMPORTANT SURVEY FROM THE
VILLAGE OF SHOREWOOD**

Dear Shorewood Resident/Property Owner:

As you may be aware, the Village of Shorewood is in the process of implementing a Comprehensive Sanitary Sewer and Stormwater Drainage Facility Plan. The plan outlines a 10-year, \$34.4 million program for making needed improvements to sanitary sewer pipes, stormwater collection systems, combined sewer pipes and private property laterals. Due to the street flooding and basement back-ups that occurred during the July 2010 rain storms and during other storms of recent years, the Village has made these improvements a top priority.

Please see the reverse side of this page for more information on the Comprehensive Facility Plan.

The purpose of the enclosed survey is to collect feedback from Shorewood property owners on a proposed plan for funding Village-wide sewer improvement projects. Every property owner in the Village is receiving this survey. You are not asked to write your name or address anywhere on the survey; all responses are anonymous. **Your input is critical to help Village officials as they finalize a program for financing these projects.** The Center for Urban Initiatives and Research at the University of Wisconsin-Milwaukee assisted with the development of this survey and will be involved with the analysis and reporting of the survey data.

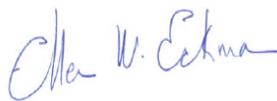
If you have any questions about this survey or want more information about this issue, please contact Chris Swartz, Village Manager, by telephone at 847.2701, or by email at manager@villageofshorewood.org; or Mike Hawes, Special Projects Coordinator, by telephone at 847.2706, or by e-mail at mhawes@villageofshorewood.org.

Thank you for your participation and helping make Shorewood the great community that it is.

Sincerely,



Guy Johnson
Village President



Ellen Eckman
Village Trustee



Patrick Linanne
Village Trustee



Thad Nation
Village Trustee



Don Ford
Village Trustee



Jeff Hanewall
Village Trustee



Michael Maher
Village Trustee



Chris Swartz
Village Manager

**MORE INFORMATION ON
THE REVERSE PAGE**



COMPREHENSIVE SANITARY SEWER, STORMWATER AND DRAINAGE FACILITY PLAN

Background Information

In response to flooding and basement back-ups that occurred due to the heavy storms of July 2010 and other storms of recent years, the Village of Shorewood has developed a Comprehensive Sanitary Sewer, Stormwater and Drainage Facility Plan. The plan was completed between September 2010 and February 2011 and was reviewed by a team of qualified engineers. The Village held three public meetings in the weeks following the July 2010 storms and six subsequent meetings to provide updates on the facility planning process to Shorewood residents and to solicit questions and comments. The Facility Plan was adopted by the Village Board of Trustees on May 23, 2011.

The Facility Plan outlines a program for improving sanitary sewer pipes, stormwater collection systems, combined sewer pipes and private property laterals. These projects are being scheduled to be implemented over a 10-year period with the highest priority projects occurring within the first five years.

For more information on the sewer projects and to view the Facility Plan document, visit <http://www.villageofshorewood.org/sewer>.

Proposed Funding Program

The estimated cost of completing all of the sewer improvement projects is \$34.4 million. **Although sewer improvements would not be taking place in the direct vicinity of every property, all properties will benefit from the projects.** The Village has prepared a program for financing the projects that utilizes a combination of funding sources, including property taxes, sanitary sewer utility user fees, stormwater utility user fees and Milwaukee Metropolitan Sewerage District (MMSD) grants. Under the current proposal, property owners could expect phased increases to their property tax bills and sewer related user fees, including the creation of a stormwater utility fund (please see the table below).

**Estimated Annual Homeowner Costs (Owner of Home Assessed at \$300,000)
(Increases in amounts beyond 2011 are due to Sewer Projects only)**

Year	Property Tax Bill – Village Share	Sanitary Sewer Utility Fee	Stormwater Utility Fee	Total	Change from Base Year (2011)
2011 – Base	\$ 2,048	\$ 343	\$ -	\$ 2,391	\$ -
2012	2,058	344	12	2,414	23
2013	2,068	346	14	2,428	37
2014	2,074	378	71	2,523	132
2015	2,084	417	193	2,694	303
2016	2,099	433	209	2,741	350
2021	2,160	499	344	3,003	612
2025 – Peak	2,188	523	347	3,058	667
2031	2,230	486	206	2,922	531
2036	2,194	343	191	2,728	337

This survey is being sent to Shorewood property owners to collect feedback on the funding methods that are being proposed for implementing the Facility Plan. **Please complete the survey and return it in the postage-paid envelope or drop it off at Village Hall by August 19, 2011.**

Appendix B: Survey Instrument



Every property owner in the Village is receiving this survey. You are not asked to write your name or address anywhere on the survey, and all responses are anonymous. We sincerely appreciate your time and participation in completing the survey.

Please return the completed survey using the enclosed pre-paid envelope by August 19, 2011.

1. How concerned are you with the potential for basement back-ups in your property?

Very Concerned

Somewhat Concerned

Not Very Concerned

Not at All Concerned

Not Sure / Undecided

2. In general, how would you describe your level of support for the Village implementing a comprehensive sewer improvement plan?

Very Supportive

Somewhat Supportive

Not Very Supportive

Not at All Supportive

Not Sure / Undecided

3. The Village is currently proposing a 10-year plan for completing sanitary and storm sewer improvements. The estimated cost of all of the projects is \$34.4 million.

Under the current proposal, the property owners could expect phased increases to their property tax bill, sewer bill and the stormwater utility bill.

- ***By 2015, the owner of a home assessed at \$300,000 could expect to pay \$303 more in property taxes and user fees than in 2011 due to proposed sewer projects.***
- ***By 2021, the owner could expect to pay \$612 more than in 2011.***
- ***In the peak year (2025), the owner could pay \$667 more than in 2011.***

How supportive are you of this funding plan?

Very Supportive

Somewhat Supportive

Not Very Supportive

Not at All Supportive

Not Sure / Undecided

4. The Village currently administers a sanitary sewer utility fund and assesses a quarterly user fee to property owners based on usage. Under the current proposal for funding storm sewer improvements, the Village would also establish a stormwater utility fund and assess an additional user fee. This new utility fund would be used to finance storm sewer related improvements.

Which method would you prefer for funding storm sewer related projects? (select only one)

- Property Taxes ONLY
- User Fees ONLY
- Property Taxes AND User Fees

MORE QUESTIONS ON THE REVERSE SIDE



5. The Village of Shorewood infrequently uses special assessments to fund capital projects. The concept of special assessment involves charging a fee to property owners for public projects that receive a direct and unique benefit from the projects (typically used by municipalities to fund street, utility or sidewalk improvements).

In line with the Village's past practices, the current proposal does not include special assessment as a mechanism for funding the sewer improvements. Alternatively, the Village could fund certain projects by charging a special assessment to owners of property located in the immediate vicinity of the sewer improvements. As a result, the Village would require less funding from property taxes and user fees.

How supportive are you of the use of special assessments to fund sewer improvements?

- | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Very Supportive | Somewhat Supportive | Not Very Supportive | Not at All Supportive | Not Sure / Undecided |
| <input type="checkbox"/> |

6. As an alternative to the proposed 10-year program, the Village could implement a shorter-term program at a higher annual cost or a longer-term program at lower annual cost. The total project costs would be approximately the same under each scenario.

Which of the following concepts do you find most preferable? (select only one)

- Current proposal (10-year program)
- Shorter construction period (5-8 years) with higher annual costs to property owners in the near-term
- Longer construction period (12-20 years) with lower annual costs to property owners over a longer period
- Do not implement a comprehensive sewer improvement program
- Not Sure / Undecided

7. Do you have any additional comments with regards to funding sewer improvement projects?

Thank you for taking the time to complete this survey. If you have any questions about this issue, please contact Chris Swartz, Village Manager at 847-2701 or Mike Hawes, Special Projects Coordinator at 847-2706. Please return the survey to the Center for Urban Initiatives and Research at the University of Wisconsin-Milwaukee in the enclosed postage-paid envelope.



Appendix C: Crosstab Analysis

Purpose: The Chi Square (X^2) test is the most important and most used member of the nonparametric family of statistical tests. Chi Square is employed to test the difference between an actual sample and another hypothetical or previously established distribution such as that which may be expected due to chance or probability. Chi Square can also be used to test differences between two or more actual samples.

One-Way Classification: The One-Way Classification (or sometimes referred to as the Single Sample Chi Square Test) is one of the most frequently reported nonparametric tests in journal articles. The test is used when a researcher is interested in the number of responses, objects, or people that fall in two or more categories. This procedure is sometimes called a goodness-of-fit statistic. Goodness-of-fit refers to whether a significant difference exists between an observed number and an expected number of responses, people or objects falling in each category designated by the researcher. The expected number is what the researcher expects by chance or according to some null hypothesis.

Assumptions: Even though a nonparametric statistic does not require a normally distributed population, there still are some restrictions regarding its use.

1. Representative sample (Random).
2. The data must be in frequency form (nominal data) or greater.
3. The individual observations must be independent of each other.
4. Sample size must be adequate. In a 2 x 2 table, Chi Square should not be used if n is less than 20. In a larger table, no expected value should be less than 1, and not more than 20% of the variables can have expected values of less than 5.
5. Distribution basis must be decided on before the data is collected.
6. The sum of the observed frequencies must equal the sum of the expected frequencies.