



DRAINAGE SYSTEMS ANALYSIS

Flooding Topic Area

Community Outreach

October 2020



**Seattle
Public
Utilities**

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Salmon in Longfellow Creek, Seattle. Holli Margell, 2009. <http://nativelightphoto.com/>

Thornton Creek Confluence Restoration, Seattle. Natural Systems Design, 2014. <http://naturaldes.com>

Flooding in South Park, Seattle. Sheila Harrison, Seattle Public Utilities, 2009.

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Flooding

Technical Memorandum

Date: October 6, 2020

Deliverable title: Community Outreach

Task No.: 2.10 - Flooding Outreach Support

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Abbreviations

| | |
|---------|--|
| City | City of Seattle |
| CISC | Chinese Information Service Center |
| DSA | Drainage System Analysis |
| DWW | drainage and wastewater |
| ECOSS | Environmental Coalition of South Seattle |
| GIS | geographic information system |
| HOAS | Horn of Africa Services |
| ISP | Integrated System Plan |
| LOB Rep | Line of Business Representative |
| ROW | right-of-way |
| SPU | Seattle Public Utilities |
| TM | technical memorandum |
| WWSA | Wastewater System Analysis |

Introduction

This technical memorandum (TM) has been prepared to describe the work done under subtask 2.10 of the flooding topic area for Seattle Public Utilities' (SPU) Drainage Systems Analysis (DSA) in coordination with SPU's Wastewater System Analysis (WWSA).

The DSA included community outreach to supplement the flooding technical analysis. Outreach and engagement work strived to ground-truth drainage system capacity model results, identify drainage system capacity risk areas where models have not been developed, provide system information and a problem-reporting "how-to" to community members, and engage communities of color about drainage and wastewater services and system performance. Feedback from residents and business owners helped SPU to confirm DSA findings and to identify new drainage system capacity risk areas.

This section provides an overview of the outreach goals, strategy, and results.

1.1 Outreach Goals

Outreach goals for the DSA were to:

- Use strategic citywide outreach and targeted priority area outreach to confirm DSA findings and to identify new drainage system capacity risk areas.
- Educate SPU system users about Seattle's drainage and wastewater systems and issues, customer service and response tools, and the overall Integrated System Planning effort.
- Use various outreach strategies to engage communities of color to ensure their needs are represented in outreach findings and ultimately in the drainage system capacity risk area prioritization in the DSA.

1.2 Priority Area Outreach Areas

SPU identified initial priority areas across the city based on the results of the modeling analysis for both the DSA and the WWSA where residents and customers may have a higher likelihood of experiencing flooding on private property or in the right-of-way (ROW) during a 2-year, 24-hour design storm.

After the identification of initial priority areas, the outreach team and SPU went through additional steps to strategically focus outreach resources. These steps consisted of the following:

- **Removed areas already surveyed or being addressed:** Since the WWSA effort preceded the DSA, any overlap between WWSA and DSA priority areas were removed as the WWSA team previously gathered flooding information in these priority areas. Locations where SPU has capital projects in progress were also removed.
- **Added unmodeled areas:** These were areas where SPU did not have a drainage system model but where SPU anticipated that drainage issues may exist.
- **Concentrated efforts where SPU did not have reports of flooding:** SPU compared the initial priority areas with the locations of reported flooding. Areas in which flooding was anticipated but that had no reports, made learning about customer experiences an important factor.

- Added locations and increased efforts with customers potentially less likely to report problems:** Customers may be less likely to report drainage issues due to lack of action by the City when other issues reported in the past remained unresolved, or when language, or lack of awareness of how to report issues created barriers. These communities may also be in traditionally underserved areas of the city and include people of color, immigrants, refugees, and low-income SPU customers. Outreach in these areas presented the opportunity to provide customers with SPU's contact information (in-language if desired) for if or when problems arise in the future.

Twenty-two DSA priority areas were identified for outreach based on the process above. SPU's WWSA project team prioritized 13 outreach areas based on wastewater system modeling. Refer to Table 1 for a list of neighborhoods with DSA (drainage) and WWSA (sewer) priority areas and Figure 1 for a map of these areas.

Both the DSA and WWSA project teams used the same survey instrument, which included questions about drainage and wastewater issues. As a result, SPU captured DSA data from the WWSA priority areas as well.

| Table 1. Neighborhoods with DSA and WWSA Priority Areas | |
|--|---|
| DSA Neighborhoods [22 total priority areas] | WWSA Neighborhoods [13 total priority areas] |
| <ul style="list-style-type: none"> Arbor Heights [4] Aurora [1] Columbia City [1] Highland Park [1] Industrial [2] Lake City [1] Northgate [1] Olympic Hills [2] Puget Ridge [2] Rainier Ave [1] Leschi [2] Licton Springs [1] Meadowbrook [2] Mt. Baker [1] | <ul style="list-style-type: none"> Beacon Hill [2] Crown Hill [1] Georgetown [1] Haller Lake [1] International District/Chinatown [1] Licton Springs [1] Queen Anne [1] Rainier Beach [2] SODO [2] West Seattle [1] |

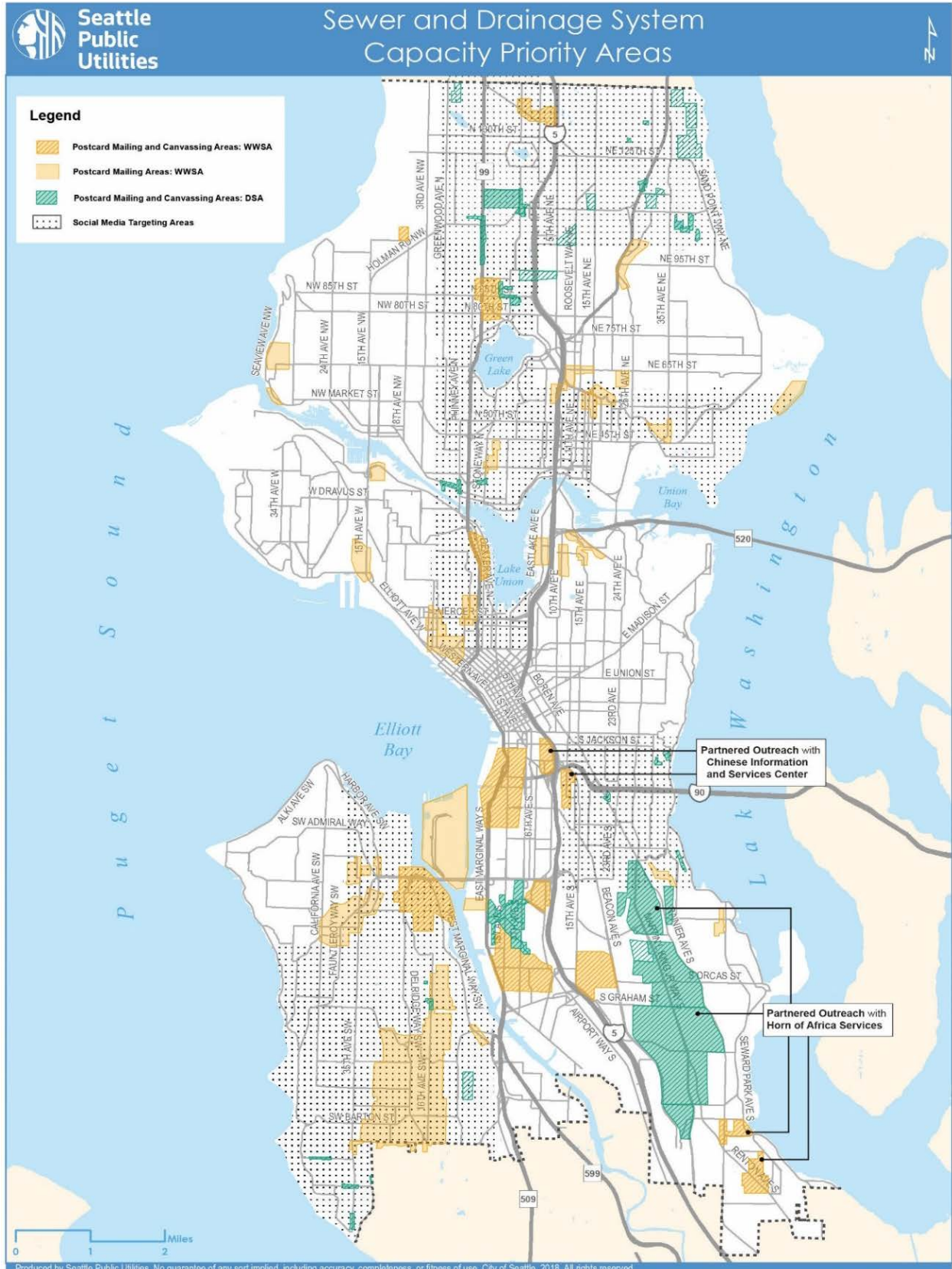


Figure 1. Sewer and Drainage System Capacity Priority Outreach Areas

1.3 Outreach Strategies

The DSA outreach strategies were developed to meet the outreach goals and was informed by the outreach-specific recommendations of the Drainage and Wastewater (DWW) System Analysis Equity Strategy (Appendix A), summarized below.

- Set clear expectations about implementation of equity-focused communications and outreach best-practices, including:
 - Dedicate outreach funding specifically for low-income communities and communities of color.
 - When resources are limited, prioritize outreach resources for outreach to low-income communities and communities of color.
 - When time is limited, prioritize outreach to low-income communities and communities of color in the schedule.
- Ensure demographic information is gathered as part of public outreach to determine if our efforts are successfully targeting a diverse range of community members.
- Provide information about SPU generally, in addition to gathering information on flooding risk areas.
- Ensure coordination between DSA and WWSA outreach and other overlapping SPU outreach efforts to ensure that communities of color are not overburdened by outreach efforts.
- Build a partnership with SPU's Community Connections program that works on outreach strategy, planning, materials, and implementation.

The SPU project team examined a variety of outreach strategies that ranged from citywide surveying to achieve a statistically valid representative sample set to gathering geographically relevant stories and other qualitative information.

The outreach strategy selection decision was primarily influenced by drainage system capacity model results and the desire to connect with parcel occupants and owners beyond a representative sample, as well as the desire to educate and engage with SPU system users. Given that residents and businesses are far less likely to take time to provide information on drainage issues when they are not personally experiencing those issues, the team used a broad, qualitative, survey-based canvassing strategy to reach many customers, gather customer experiences, and add depth to model results. The outreach team targeted the following groups:

1. SPU customers who live in specific areas where (a) models simulated the highest likelihood of drainage system capacity issues or (b) where model results were not available, but issues may still exist (see Section 1.2.1 Priority Area Outreach for more information)
2. Communities of color through partnership with SPU's Community Connection program (see Section 1.2.2 Community Connections Outreach)
3. SPU customers citywide to identify potential gaps in results from the targeted outreach (see Section 1.2.3 Citywide Outreach)

SPU provided information and links to the survey in an online format to the targeted groups (see Appendix B for a copy of the survey and informational materials). Paper surveys were also available upon request. Survey questions were translated into Spanish, Vietnamese, Korean, Simplified Chinese, Traditional

Chinese, Tagalog, and Somali. The survey included questions about both drainage and wastewater issues in order to be efficient with resources, limit engagement fatigue, and because drainage and wastewater issues are often indistinguishable to community members.

SPU's targeted outreach in the priority areas sought to collect information on the presence or absence, severity, recurrence, and duration of drainage system issues experienced by residents and customers. SPU tailored outreach tactics for each of the selected neighborhoods, based on its specific character and needs. These tactics included postcard mailings, door-to-door canvassing, targeted social media advertising, outreach to business and industrial groups, and coordination with community-based organizations in four of the neighborhoods with high priority areas (see Section 1.2.2 Community Connections Outreach). In-person outreach was conducted by staff fluent in Spanish, Korean, and Vietnamese. Figure 2 illustrates the variety of outreach strategies used to collect information.

KEY STRATEGIES







| |  Social Pinpoint/Raincheck |  Online survey |  Hardcopy survey |
|--|--|---|--|
|  Social media campaign (by zip) | <ul style="list-style-type: none"> All priority and unmodeled zip codes received social marketing ads. | | |
|  Direct mail campaign | <ul style="list-style-type: none"> All SPU customers received a link through the @ Your Service newsletter. | <ul style="list-style-type: none"> All priority and unmodeled addresses received direct mail with link to online survey. | |
|  Door-to-door canvassing | <ul style="list-style-type: none"> Outreach staff used Raincheck in the field to capture observed flooding. | <ul style="list-style-type: none"> All the priority and unmodeled areas we visited received a link to online survey. | <ul style="list-style-type: none"> We provided hardcopies in areas where census data indicated limited access to the internet |

Figure 2. Key Outreach Strategies

Whenever the outreach team encountered low response rates, they adjusted their approach to increase their use of neighborhood-based social media to advertise the effort, and also set up tables in common spaces to gather information where people were already meeting for other reasons.

1.3.1 Community Connections Outreach

SPU worked to engage communities of color by partnering with community-based organizations that are contracted through its Community Connections program. To better support people of color, immigrant, refugee, and low-income customers, SPU funds multi-year partnerships with trusted organizations and leaders that serve a variety of ethnic and language groups. These organizations included the Chinese Information Service Center (CISC), Horn of Africa Services (HOAS), and the Environmental Coalition of South Seattle (ECOSS). Both CISC and HOAS conducted direct, door-to-door outreach in communities where they already provide services and have existing relationships (the International District/Chinatown and Rainer Beach, respectively). CISC integrated questions about drainage systems into their existing community events and meetings. HOAS conducted 380 survey-focused interviews with community members about their experiences with the drainage and wastewater system (Appendix C). Cascadia and ECOSS collaborated on outreach in the Puget Ridge and Rainier Ave communities.

These efforts supplemented the other priority area outreach efforts underway in these four communities (see Section 1.2.1 Priority Area Outreach).

1.3.2 Citywide Outreach

A citywide outreach campaign shared information about the DSA and created opportunities for customers to share their stories about drainage system issues in all areas of the city, not just those included in the priority areas outlined above. SPU's "[Raincheck](#)" website provided context for the analysis and included an online mapping tool that allowed users to submit locations where they have experienced drainage or wastewater problems. An abbreviated online version of the survey was coupled with the mapping tool, allowing users to share more information on their drainage or wastewater problem.

Residents and SPU customers citywide were also directed to the Raincheck website and associated survey through neighborhood news outlets, such as the West Seattle Blog and Seattle Greenlaker, as well as social media. Links to the survey were also provided to all SPU customers who receive the *@ Your Service* newsletter, a monthly information source provided through paper and electronic billing services.

1.4 Outreach Efforts and Results

Over 20,000 mailers, with links to surveys, were distributed within the DSA and WWSA outreach priority areas. Additionally, over 3,200 homes and businesses were visited by the outreach team as a follow up to the mailer. SPU received over 1,050 completed surveys (including 77 *Raincheck* responses).

Figure 3 summarizes these outreach efforts and responses and Figure 4 shows the survey response density.



Figure 3. Outreach Efforts by the Numbers

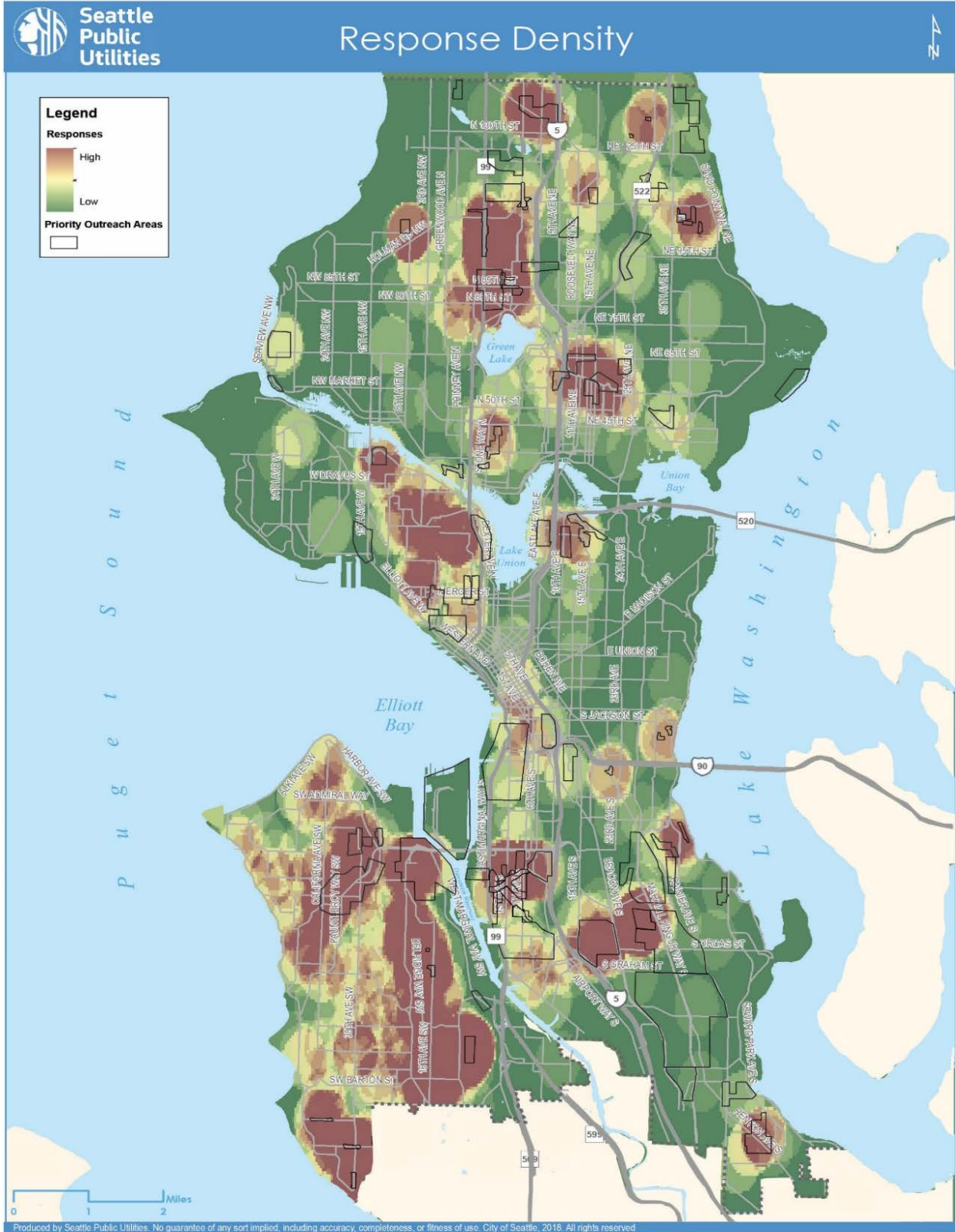


Figure 4. Survey Response Density

1.4.1 Outreach Responses

Respondents reported on single or multiple incidences of flooding in the ROW or private property and also used the survey to confirm when no flooding had been observed. Respondents in unmodeled areas commonly reported that they had not experienced any flooding, which supported the concept that limited geographic areas exist that do not need to have models developed for them.

SPU reviewed the outreach responses and discerned whether the reported issues were about the drainage or the wastewater system. SPU reviewed the drainage system survey results and incorporated the information into drainage system capacity risk areas.¹ Wastewater system related responses were provided to the WWSA team.

Not all survey responses could be traced to a specific location, especially when respondents reported flooding in their neighborhood instead of at their homes. Without enough information on cross-streets or addresses, these responses could not be used to identify new or inform already identified risk areas.

Responses gathered through the outreach efforts consisted of the following:

- 407 responses (47%) were located within the 35 combined priority areas (DSA and WWSA)
- 496 responses (57%) reported ROW flooding (from roadside puddles to entire blocks flooded)
- 228 responses (26%) reported flooding into private property
- 29 known or simulated drainage capacity risk areas and 74 new drainage capacity risks areas were identified based solely on responses
- 77 entries were provided through the Raincheck website (<https://spuraincheck.participate.online>)

Respondents in unmodeled areas, when contacted in person, often reported that they did not experience any flooding.

1.4.2 Response Demographics

- Of the completed surveys, 447 respondents provided optional, self-identified demographic information. Sixteen surveys were completed in-language (10 in traditional Chinese, 3 in Spanish, 2 in simplified Chinese, and 1 in Vietnamese).
- Demographic data was aggregated, and not specifically tied to neighborhoods or addresses.
- Due to being an optional section in the survey, and not always filled out by participants, the data is not a consistent or significant measure of outreach in communities of color.

See the series of pie charts in Figure 5 below for a visual representation of the data.

¹ This information will be in the DSA Flooding Task summary TM.

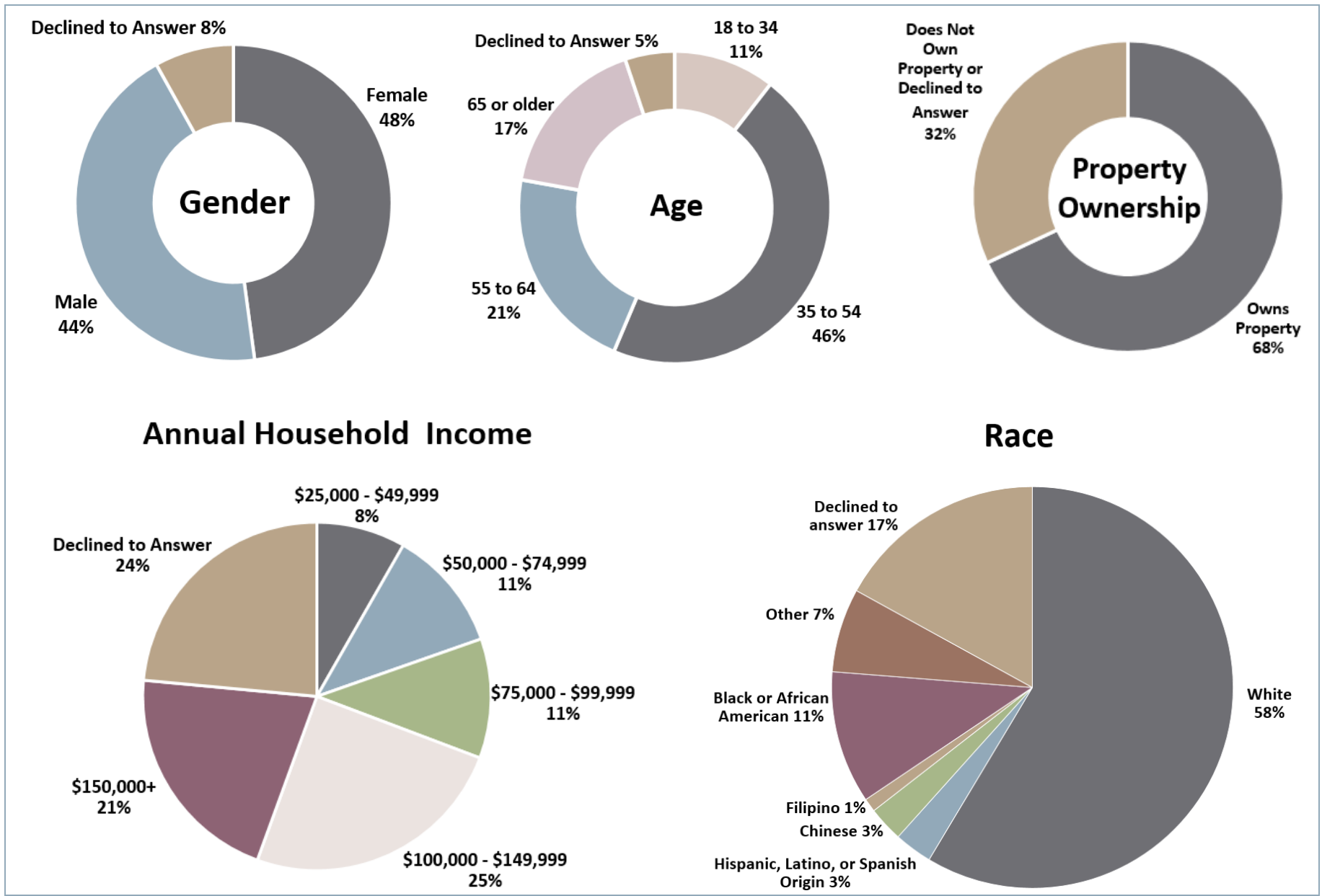


Figure 5. Demographics

1.4.3 Discussion

This section summarizes the key findings, limitations, and lessons learned from the DSA outreach.

- **Key Findings**

- Survey responses provided information to identify 74 new drainage system capacity risk areas, as well as additional information for 29 previously identified risk areas.
- Direct outreach in communities of color through SPU's Community Connections program increased the number of responses from historically underserved communities.
- Canvassing and physical presence in neighborhoods raised awareness of SPU services. Communities generally appreciated information on who to contact in the event of a sewer or drainage issue, regardless of whether they had personally experienced flooding or backups.

- **Limitations**

- The outreach was performed in two phases: the first in January to March 2019 during a rainy season using wastewater priority areas, and the second between April and June 2019 in a relatively dry season using drainage priority areas. When surveyed during a dry season, respondents are less likely to recall flooding incidents. To counter this potential result, drainage questions were part of the first phase survey, and the citywide social media and *Raincheck* outreach strategies were conducted earlier in the year when rain was present.
- Responses appeared to be delayed by a snowstorm in February 2019.
- Response rates were likely affected by the survey length and format (primarily online).
- ROW flooding could be caused by several issues in addition to pipe capacity, including improper road grading, pavement, and parking lane quality, etc. The survey attempted to guide responses to gather clear information on the cause of flooding, but it was not always successful in doing so.
- For responses related to private property flooding, the actual property impacted could not be identified in cases when respondents only provided the closest street intersection.

- **Lessons Learned**

- Outreach objectives sought a broad range of outcomes, both technically/geographically focused and social/relationship based. These significantly different outcomes could not be supported by a single outreach approach and competed for project resources.
- The pairing of direct outreach and pamphlets that described all SPU services was effective in gathering useful feedback from priority areas across the city.
- Specific locations of ROW and private property flooding were rarely recorded in the survey responses gained through Community Connections. Rather, results were often aggregated. This was a missed opportunity but may reflect privacy concerns.
- The quality of information gathered varied by source. For example, surveys prompted by direct mail and canvassing tended to result in more complete information. Surveys prompted by less focused methods (e.g., neighborhood- or zip code-wide online ads) more often resulted in incomplete responses. Citywide notifications (such as the *@Your Service* newsletter) were much less effective at driving responses than social media.

Appendix A: DWW Equity Strategy for System Analysis Projects

The project team followed the section of the strategy titled, “Communications/Outreach” on page A-2 to guide their work.

Date: August 2, 2018

To: Holly Scarlett, Drainage System Analysis Project Manager

From: Annalisa McDaniel, DWW Branch Equity Team

Document Purpose: This document outlines a strategy to examine how elements of the Wastewater System Analysis and the Drainage System Analysis, such as performance targets, problem identification, and problem prioritization, may impact, either positively or negatively, the City’s commitment to eliminate racial disparities and achieve racial equity in Seattle.

Goals:

- Incorporate analysis of equity impacts into the WWSA and DSA in a meaningful way.
- Build shared understanding among the project team members and project leadership that considering equity early in the integrated system planning process is valuable.
- Reinforce that equity is an important factor every time DWW makes a decision or selects a preferred option.
- Lay groundwork for DWW Vision and Integrated System Plan equity strategy.

Recommendations on when/where to incorporate equity considerations in analysis projects:

Note: An [equity toolkit](#) was completed by the DWW LOS Policy team in 2016. The recommendations of the toolkit have been incorporated into this strategy as they are directly applicable to the WWSA and DSA.

WWSA and DSA

- Core Team completes ‘SPU Equity Toolkit for Service, Project, or Program Development’ during the selection of the final performance target. See WWSA example [here](#) (LOB Rep or Topic Area Lead is the lead for this, as appropriate).
- Add demographic/race layer to current condition maps on summary sheets to provide context (LOB Rep or Topic Area Lead is the lead for this, as appropriate).
- Incorporate equity into prioritization tool(s) and tasks in a meaningful way (Holly is the lead for this).
- Incorporate applicable findings of the DWW Branch Equity Team Customer Response sub-committee analysis into these efforts (Annalisa is the lead for this).

WWSA

- Evaluate equity as one consideration in [table](#) that identifies pro/cons of each performance parameter.
- Include Racial and Social Equity Index on sub-basin summary sheets and problem sheets, either graphically or by including a yes/no check box.

DSA

All Topic Areas

- Include a section in the final Topic Area Technical Memoranda that describes how the project team evaluated equity as part of their analysis, describes any relevant findings of this evaluation, and

identifies equity impacts that may result in the integrated system planning phase. This section should be included in the TMs even if this document does not have any specific recommendations for the topic area.

Task 2: Flooding

- Task 2.3: Performance Targets
 - Apply a modified racial equity toolkit to help select final performance targets. Please see to the [WWSA example](#).
- Task 2.5: Extreme Storm Impact Analysis
 - “Develop analysis methods to evaluate the impacts of extreme events in both separated and combined sewer areas using the preliminary draft planning benchmarks. Method shall include developing criteria that define when and where an extreme storm event causes a problem and a metric for comparing potential impacts at different locations.”
 - Extreme events will impact people, and this should be considered. There should be a discussion around who will be disproportionately impacted by extreme events such as communities of color, residents with limited mobility, etc. and how this influences the definition of a “problem”. Even if a solution is not proposed in this phase of the planning effort, this task is laying the foundation for future planning work that will result in proposed solutions.
- Task 2.6: Sea Level Rise and Wave Inundation
 - Perform a high-level analysis of sea level rise and wave inundation to identify potential areas of concern and evaluate the impacts during selected planning level benchmarks.
 - Please see comment for Task 2.5. Impacts to people need to be considered.
- Task 2.8: Investigate and Prioritize Flooding Issues
 - Identify if a flooding issue is located in a ‘high disadvantage and priority area’ identified in the Racial and Social Equity Index. This can be shown on a map or a Y/N column in a spreadsheet, depending on the format of the deliverables.
- Task 2.9: Further Evaluate High-Priority Flooding Problems
 - Task 2.9.2: Include Racial and Social Equity Index layer in the high priority problems fact sheets to provide context.

Task 3: Water Quality & Flow Control (Aquatic Life)

- No recommendations, topic area team to discuss.

Task 4: Fish Passage Barriers, Task 5: Floodplain Reconnection Opportunities, and Task 6: Aquatic Habitat Opportunities

- No recommendations, topic area team to discuss.

Task 7: Surfacing Groundwater

- No recommendations, topic area team to discuss.

Task 8: Landslide Mitigation

- No recommendations, topic area team to discuss.

Task 9: System Layout Challenges

- No recommendations, topic area team to discuss.

Communications/Outreach

- Incorporate City of Seattle equity expectations and recommendations into the Public Involvement Plan, specifically:
 - Level of Service Policy Equity Toolkit recommendations
 - Race and Social Justice Initiative Equity Strategies
 - SPU's Environmental and Social Justice goals and strategies
- Set clear expectations for the consultant about implementation of equity-focused communications and outreach best-practices, including:
 - Dedicate outreach funding specifically for low-income communities and communities of color.
 - When resources are limited, prioritize outreach contract resources for outreach to low-income communities and communities of color
 - When time is limited, prioritize outreach to low-income communities and communities of color in the schedule
 - Ensure demographic information is gathered as part of public outreach to determine if our efforts are successfully targeting a diverse range of community members.
 - Provide information about SPU generally, in addition to gathering information on problems. Use this as an opportunity to share information on surfacing groundwater (DSA Task 7) as this is a problem type that residents may not be aware that they can report.
- Ensure coordination between WWSA and DSA outreach and other overlapping SPU outreach efforts to ensure that communities of color are not overburdened by outreach efforts.
- Build a partnership with SPU's Community Connections Program that works on outreach strategy, planning, materials and implementation.

At the end of the project, hold a debrief to review the outreach process and identify if we reached communities of color. If we did not reach communities of color as well as we intended, identify what could we have done differently and apply lessons learned to upcoming planning efforts.

Appendix B: Survey and Informational Materials

Flooding and Sewer Study Survey



Seattle Public Utilities is studying the drainage and wastewater system in your neighborhood. Please tell us about any flooding problems that you've noticed in your home, workplace, or neighborhood.

We've asked you to complete this survey because we need to know more about your neighborhood. A comprehensive understanding of any problem areas around the city will help us plan and prioritize future work. We expect this survey will take about ten minutes to complete. **If you complete the survey, you can enter into a raffle for one of several gift card prizes.**

Acknowledgement:



- I understand that emergencies should be reported to 911. Hazardous flooding situations should be reported to SPU's Operations Response Center at 206-386-1800.

Surfacing Groundwater

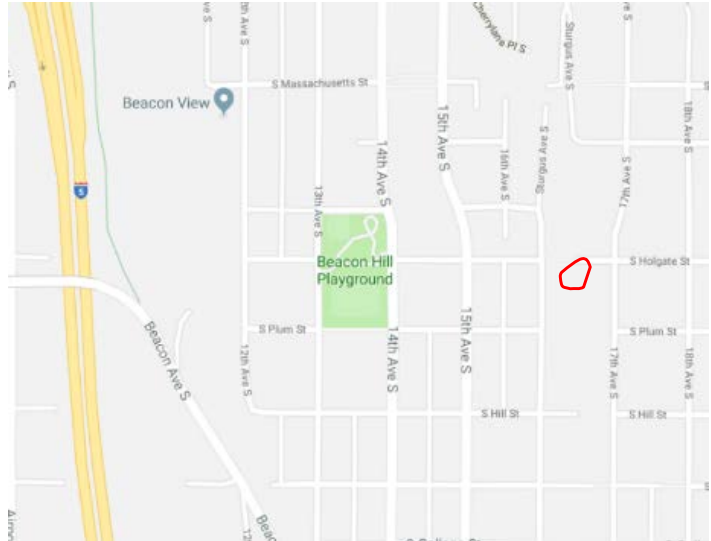
What is the intersection closest to the location where this survey was sent? Please include directional street info such as S, N, SW, NE, etc.

Is there flooding in the street or sidewalk near your home or workplace when it is not raining?

- Yes
- No
- I don't know

(if "No" or "I don't know" please skip to **Flooding outside the building** on page 3; if "Yes", please continue)

Where did the flooding occur? Please mark location(s) on the enclosed neighborhood map with a "O", like in this example.



Do you regularly see moss or ice (during freezing temperatures) on the street or sidewalk in your neighborhood? Please check all that you've seen.

- Moss
- Ice
- None of the above

Does flooding or standing water block access to your home or work or impact people walking or driving in the area?

- Yes
- No
- I don't know

Is there anything else you want to say about this area?

How long have you lived or worked at your current address?

- Less than a year
- 1 to less than 3 years
- 3 to less than 5 years
- 5 years or more

About how deep was the flood water?

- Less than one inch
- 1 inch to less than 6 inches
- 6 inches to less than 12 inches
- 12 inches or more
- I don't know

About how long did the flood last?

- Less than an hour
- An hour to less than 6 hours
- 6 hours to 24 hours
- More than 24 hours
- I don't know

Did the flood water on the street or sidewalk include sewage (due to sewage odor, visible signs of sewage)?

- Yes
- No
- I don't know

Is there anything else you want to say about this area?

Flooding in your home or workplace

Have you ever experienced flooding in your home or workplace at this location?

- Yes
- No
- I don't know

*(if "No", or "I don't know" please skip to **About You** on page 7; if "yes", please continue)*



Flooding in a home's basement

The last time it flooded, what did you observe? Please check all that apply.

- Backup through floor drain or toilet
- Leaking or dripping into basement
- Burst water pipe
- Water came in from outside
- I don't remember
- Other (Please describe): _____

Do you remember when the most recent flooding occurred? Please describe in as much detail as you can:

- Year: _____
- Date (mm/dd if known): _____
- Season (winter, fall, summer, spring): _____
- Weather (light rain, heavy rain, dry): _____
- I don't remember
- Are there any additional details to note? (Please describe):

Where did the flooding occur? Please check all that apply.

- Ground floor/first floor
- Basement
- Garage
- Space under house (crawl space)
- Living space
- Yard, side walkway or driveway
- Other (Please describe): _____
- I don't know

Did flooding cause property damage?

- Yes
- No

How many times has flooding occurred in the past year?

- Not within the past year
- Once
- Twice
- Three or more times
- I don't know

To your knowledge, this is an issue that affects...

- Only your property
- Nearby neighbors also
- I don't know the extent of the issue

Did you report the problem to the city?

- Yes
- No
- I can't remember

Did the flood waters contain sewage (due to sewage odor, visible signs of sewage)?

- Yes
- No
- I don't know

(if "No", or "I don't know" please skip to the next section, **About you**; if "yes", please continue)

Have you had any work done to prevent backups (backflow preventer valve, etc.)?

- Yes
- No

(if "No", or "I don't know" please skip to the next section, **About you**; if "yes", please continue)

If work was done, was the work successful? Have you had problems since?

- Work was successful, no problems since repairs
- Work was not successful; the problem has reoccurred
- Work was not successful, but the problem did not reoccur
- Work on the original flooding problem was successful, but there are new flooding problems

About you

Which of the following broad ranges includes your age?

- 18-32
- 35-54
- 55-64
- 65 or older
- Decline to answer

What is your gender?

- Male
- Female
- Other _____
- Decline to answer

Are you of Hispanic, Latino, or Spanish origin?

- Yes
- No
- Decline to answer

What is your race? Check all that apply.

- White
- Black or African American
- Chinese
- Filipino
- Vietnamese
- Other (please specify):

- I don't know
- Decline to answer

Please identify your annual household income.

- Below \$25,000
- \$25,000 - \$49,999
- \$50,000 - \$74,999
- \$75,000 - \$99,999
- \$100,000 - \$149,999
- \$150,000 or over
- I don't know
- Decline to answer

Thank You!

Informational flyer (booklet pages 1 and 4)

PLANNING FOR THE FUTURE STARTS TODAY

This study is the beginning of a four-year initiative to plan smart short- and long-term system improvements. We recognize parts of our system need maintenance or replacement. Believe it or not, some pumps and pipes have been in service for over 100 years! With this study we hope to gather information to help us plan fixes that are ready for future environmental changes, address local problems, and provide benefits to our communities.



Keeping the system working helps to keep our local waterways clean and healthy.

ABOUT SEATTLE PUBLIC UTILITIES

Services that support your life every day

Seattle Public Utilities helps to keep our neighborhoods and environment clean and healthy. We provide drinking water, sewer services, drainage, and garbage services for people in and around the City of Seattle.

Part of our job is to maintain the complex system of pipes and pumps that safely carry sewage and stormwater away from where people live and work. Most of that system is hidden underground where you can't see it. We're planning ahead to make sure that the system we all rely on continues to work like it should for years to come.

PROJECT CONTACT

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Holly Scarlett
Project Manager
Drainage Systems Analysis
Phone: (206) 386-4195
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Who should I call if I have problems NOW?

- ➔ For emergencies, call 911
- ➔ If you experience sewer backups or bad flooding during a storm, call our 24/7 Emergency Services line at (206) 386-1800
- ➔ For non-urgent plugged storm drains, use our online drain report form by visiting www.seattle.gov/util/myservices/drainagesewer
A crew member will respond in 3-5 business days.



Seattle Public Utilities

FLOODING AND SEWER STUDY

Please share your experiences with flooding and sewer backups

Seattle Public Utilities is studying flooding in the drainage and wastewater systems. Information you and your neighbors share will help us understand where the system isn't working and plan future upgrades.

Please fill out our online survey.

go.participate.online/DSA3

We are especially interested in hearing from you if you have experienced flooding or sewer backups, noticed flooding in the street or sidewalk in your neighborhood, or if you own a building/house in Seattle.

If you'd like a paper survey, or to fill it out over the phone, please call (206) 274-4944.

Thank you for your help!

Fill out our survey and you will be entered in a raffle to receive prizes from these local EnviroStars businesses:



go.participate.online/DSA3

Informational flyer (booklet pages 2 and 3)

What can flooding or sewer backups look like?



Aging infrastructure and capacity problems can cause flooding on streets and sidewalks during heavy rains.



Storms can overwhelm pipes and lead to interior flooding and property damage.



Heavy rain can lead to drain overflows that back up into sidewalks, streets, private property, and parking lots.



Water on roadways can affect local traffic and lead to temporary road closures.

Share your experience with us (English)

Please fill out our online survey. We are especially interested in hearing from those who have experienced flooding or sewer backups, and those who own a building/house in Seattle.

우리와 당신의 경험을 공유하세요 (Korean)

온라인 설문에 응해 주세요. 우리는 특히 범람이나 하수관이 밀린것을 경험한 사람들과 씨에들에 건물/주택을 소유한 사람들로부터 연락을 받는 것에 관심이 있습니다.

우리는 특히 홍수 또는 하수구역류를 경험 한 사람들과 시에들에 건물 / 집을 소유 한 사람들의 이야기에 관심이 있습니다

Nala wadaag khibraddaada (Somali)

Fadlan buuxi saadaasha onleenkeena. Waxanu si gaar ah u daneeyneynaa kuwa la ay soo kulantay daadadka iyo dib usoo butaaca musqulaha, iyo kuwa dhimayaasha iyo guryaha ku dhex leh Seattle.

Ibahagi ang iyong karanasan sa amin (Tagalog)

Mangyaring kumpletuhin ang aming online na pagsusuri. Kami ay alang interesado sa pandinig mula sa mga nakaranas ng pagbaha o pagbara ng mga imburnal, at mga taong nagmamay-ari ng isang gusali/bahay sa Seattle.

Chia sẻ kinh nghiệm của bạn với chúng tôi (Vietnamese)

Vui lòng điền vào khảo sát trực tuyến của chúng tôi. Chúng tôi đặc biệt thích nghe những người đã trải qua lũ lụt hoặc đã bị nghẹt cống rãnh, và những người sở hữu một tòa nhà / ngôi nhà ở Seattle.

与我们分享您的经历 (Chinese)

请您填写我们的网上调查，我们特别希望聆听到经受过水浸或下水道反水问题的人群的反馈，以及在西雅图拥有物业或房子的业主。

與我們分享您的經歷 (Chinese)

請您填寫我們的網上調查，我們特別希望聆聽到經受過水浸或下水道反水問題的人群的反馈，以及在西雅圖擁有物業或房子的業主。

Comparta su experiencia con nosotros (Spanish)

Estamos interesados en escuchar las experiencias de personas que tuvieron especialmente problemas con inundaciones o desbordamientos del alcantarillado en sus hogares. Por favor complete nuestra encuesta disponible en nuestro sitio web.

ተመክሮ ጉም ኣካፍሎና፤ (Tigrigna)

ነቲ ኣብ ድረገጽና ዘሎ ዝጻሀሰሰ ሙጽናዕቲ ምልኡልና። ንሕና ካብቶም ናይ ውሕጅ ወይከኣ ናይ ምዕባስ ሻምቡቅ ሙተሓላለፊ ርስሓት (ፍኛቲራ) ተመክሮ ዘለዎም ወይ ካብቶም ኣብ ሲያትል ሀንጻ/ገዛ ዘጥረዩ ብፍላይ ክጎሰምዎ ንደሊ።

ተምክሮዎን/ልምድዎን ያካፍሉን። (Amharic)

አባከዎን በድህረ ገጻችን ላይ ያለውን ቃለ መጠይቅ ይሙሉልን። በተለይም ደግሞ በሲያትል ከተማ ውስጥ የሀንጻ ወይንም የሙኖሪያ ቤት ባለይዘታ ሆኑት የጎርፍና ፍሰት ማስወገጃ ሙዘታት ካጋጠመዎ ልምድዎን እንዲያካፍሉን በትህትና እንጠይቃለን።

Muuxannoo keessan nuuf hiraa (Oromo)

Namoota gamoo/mana jireenyaa Magaalaa Siyaatil keessaa qabaatanii lolaa fi rakkoo sochii dhangala'aa xuraa'aa irratti muuxannoo qaban irraa dhagahuu waan feenuuf, maaloo gaaffiiwwan qorannoo kana nuuf guutaa.

[go.participate.online/DSA3](https://www.seattle.gov/util) | www.seattle.gov/util

Direct mailer postcard



Seattle Public Utilities is studying flooding in the drainage and wastewater systems. Information you and your neighbors share will help us understand where the system isn't working and plan future upgrades.

Please fill out our online survey. We are especially interested in hearing from you if you have experienced flooding or sewer backups, noticed flooding in the street or sidewalk in your neighborhood, or if you own a building/house in Seattle.

If you'd like a paper survey, or to complete the survey over the phone, please call (206) 274-4944

Take our survey: go.participate.online/DSA1



For more information about this project, please visit SPURainCheck.participate.online

WHO SHOULD I CALL IF I HAVE PROBLEMS NOW?

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After filling out our survey you can enter into a raffle to receive prizes from these local EnviroStars businesses:



Seattle Public Utilities
PO Box 34018
Seattle, WA 98124-4018

Share your experience with us
Please fill out our online survey. We are especially interested in hearing from those who have experienced flooding or sewer backups, and those who own a building/house in Seattle.

Comparta su experiencia con nosotros
Estamos interesados en escuchar las experiencias de personas que tuvieron especialmente problemas con inundaciones o desbordamientos del alcantarillado en sus hogares. Por favor complete nuestra encuesta disponible en nuestro sitio web.

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우리는 특히 홍수 또는 하수구역류를 경험 한 사람들과 시애틀에 건물 / 집을 소유 한 사람들의 이야기에 관심이 있습니다.

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与我们分享您的经历
请您填写我们的网上调查，我们特别希望聆听到经历过水浸或下水道反水问题的人群的反馈，以及在西雅图拥有物业或房子的业主。

與我們分享您的經歷
請您填寫我們的網上調查，我們特別希望聆聽到經歷過水浸或下水道反水問題的人群的反馈，以及在西雅圖擁有物業或房子的業主。

Alternative formats available
Voice: 206-684-2489 (CITY) T1: 7-1-1

Appendix C: Horn of Africa Services 2019 Report

Drainage and Wastewater, and Side Sewer Survey Report



**Horn of Africa Services
With the Seattle Public Utilities**

March 22, 2019

Introduction

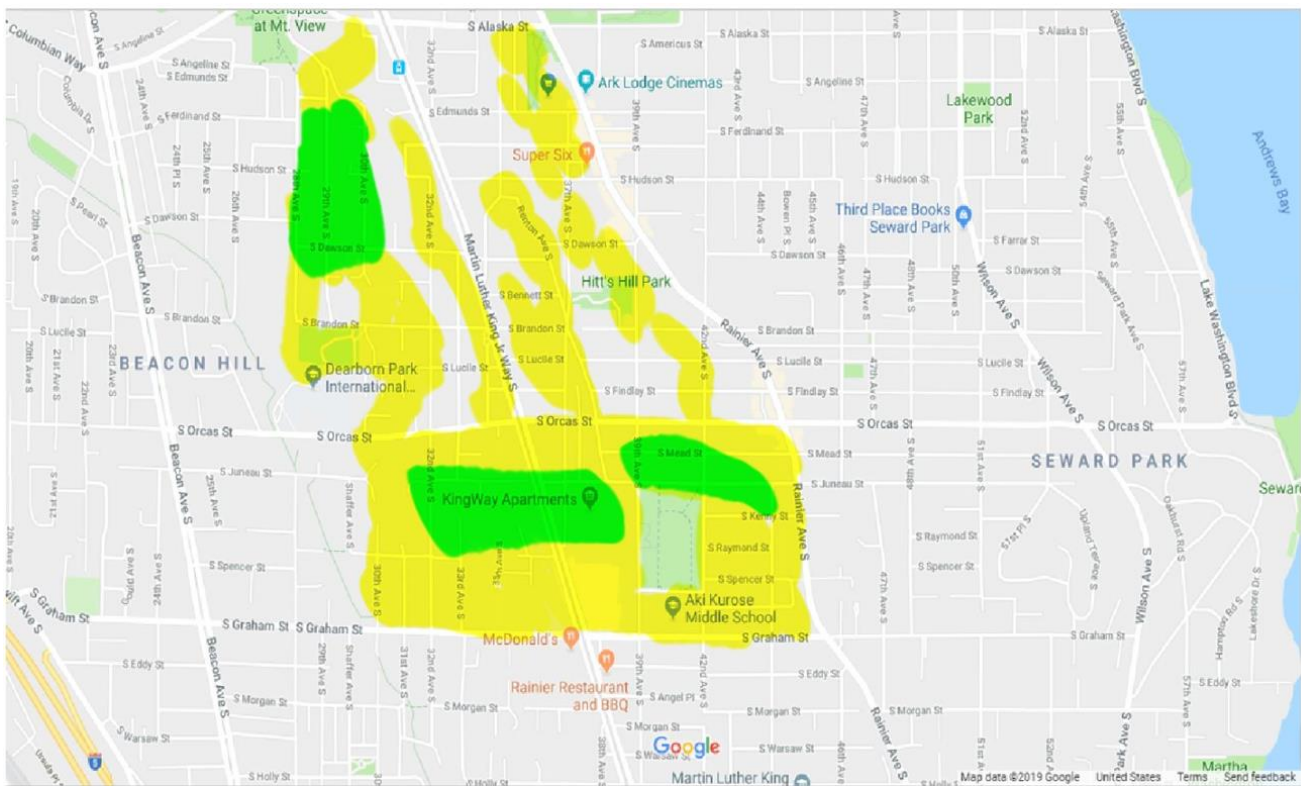
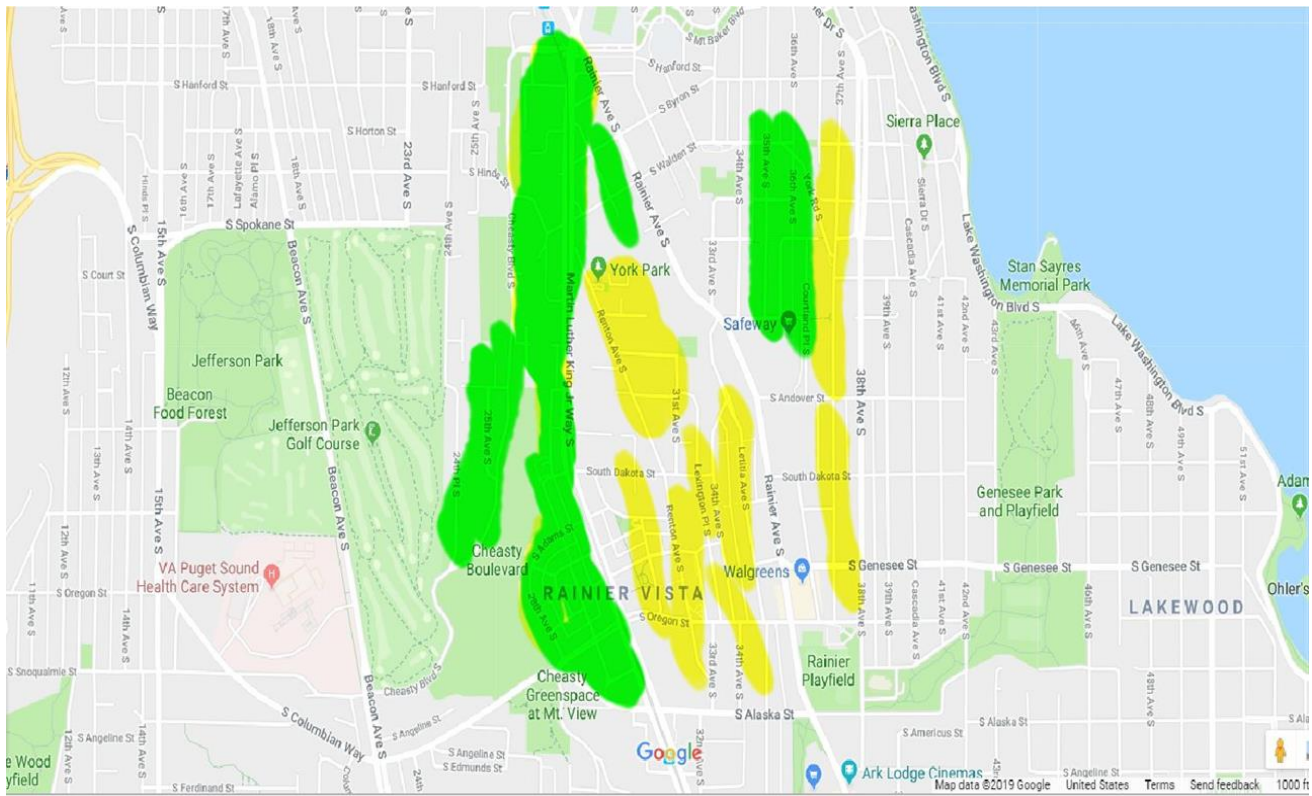
Having the flawless drainage and wastewater system is hard to attain and also crucial for the growth and health of the population reside in the city. The drainage and wastewater include bot the connecting every individual house and building to the public pipe system or it can be side sewer. In the city of Seattle the public mainly depend on the pipe system. Understanding the drainage and wastewater will help the people to get the best services and also help the service providing organization. Imagine what you can do to help the Seattle Public Utilities by understanding what you can do to help the city's drainage system pipes. It is also crucial for each individual to full understand and use the system effectively. The disparities in the knowledge of the drainage and wastewater system can cost the people their health, their time, and their money. Therefore, the Seattle Public Utilities with the Horn of Africa Services organization focused on filling the knowledge gaps that the East African immigrants and dependents have in understanding the how they our community can communicate with the Seattle Public Utilities.

Background

The East African countries are developing country, therefore, even in the urban area the drainage and wastewater system are not in service. Not having prior knowledge of the drainage and wastewater system is impacting the community that we represent here in Seattle. This knowledge gap has been impacting our community. As the result our community has limited knowledge of reporting the problem to the responsible organization. When we completed this survey we interacted with our community which we represent. Our conversation and their responses have been detailed in the body of this report.

Horn of Africa Services (HOAS) surveyed 380 East African decedent/immigrant people who currently living in Seattle. Participants are the city of Seattle resident residing in Columbia, New Holly, and Rainier Vista Neighborhoods. The age and ethnicity/country of origin gender and sexual orientation of the participants are detailed in the demographic part of this report. The blow maps show the distribution of the residents who complete the survey.

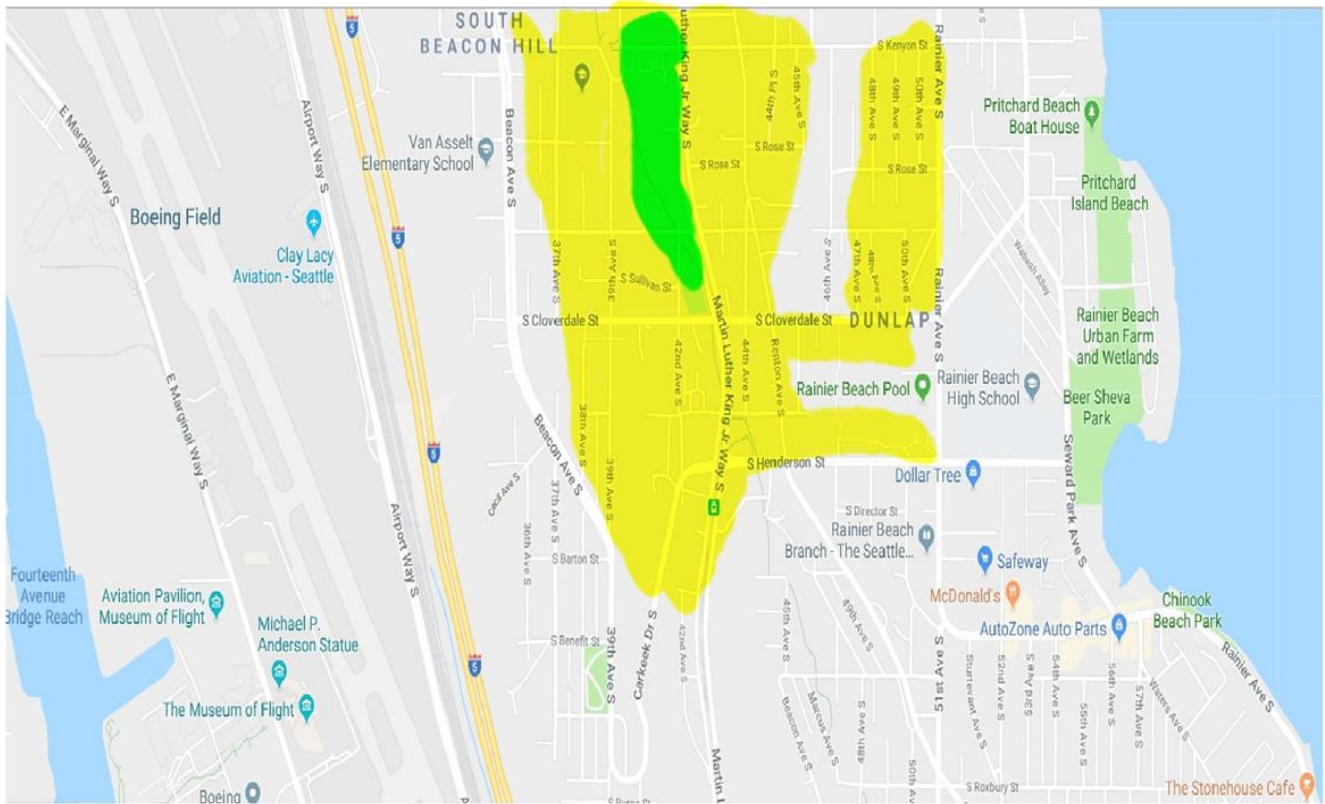
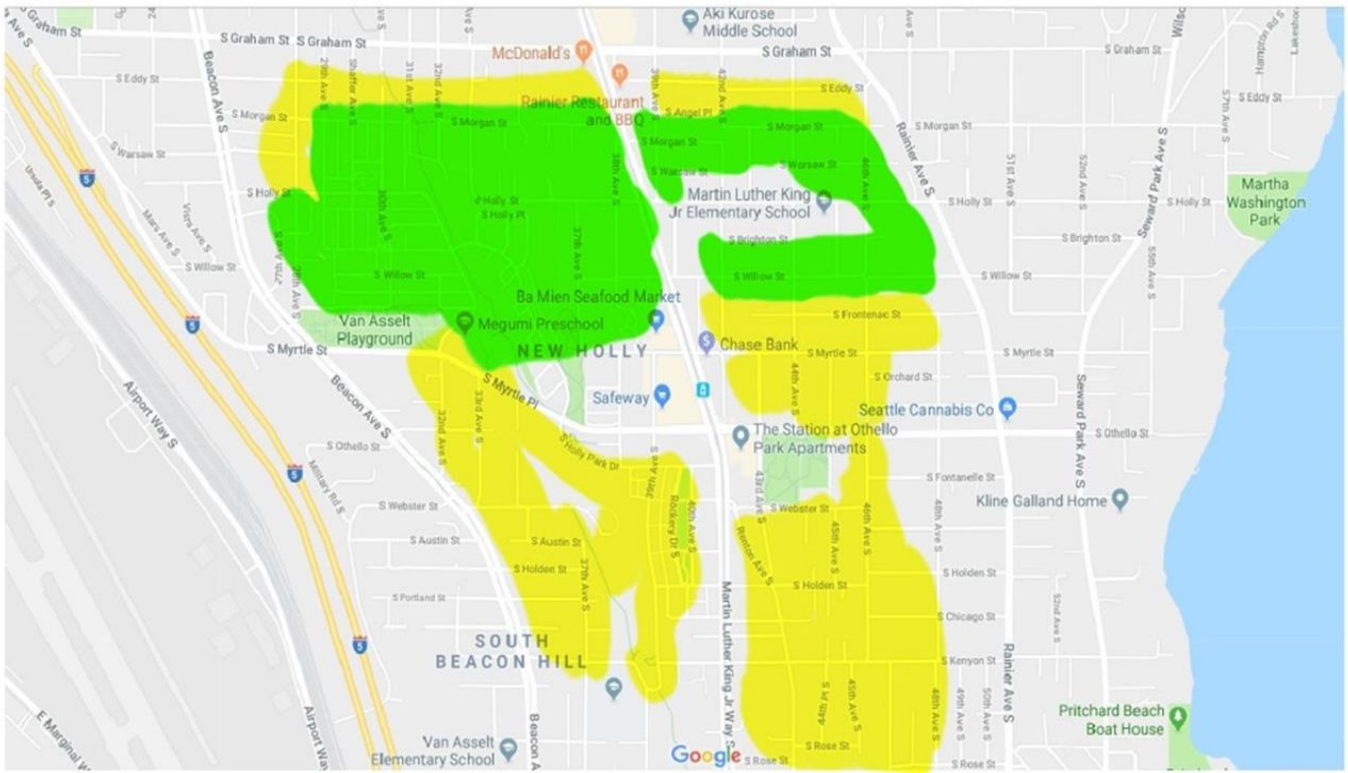
The surveys were completed in different approaches: One - on - one meeting, focus group, community events, and door-to-door outreaches. The questionnaires were translated to the communities' languages and provided to them for then to complete the survey independently. In some cases where the participants have the limitation to read and understand their own language the staff helped the participants by reading the question for the participants and their answers and their feed backs where written by staff. In the community meetings the participants were given an opportunity to discuss on the surveys question and engaged in the conversation to enforce them to remember their past experience related to flooding.



Key

: Blocks where more people surveyed

: Blocks where few people surveyed



Key

: Blocks where more people surveyed

: Blocks where few people surveyed

Experiences of the people related to flooding

Most if the participants reported that they did not experienced ant flooding issue or they do not have flooding collection since they start leaving in Seattle. According to the participant report only 3.4 percent of the population even experienced flooding in their house or at their working places. And 96.6 percent reported not experiencing flooding neither at the house nor at their work places. The 3.6 percent of participants who have seen or experienced flooding either at their work places or their house reported that the majority of the flooding occurred as the result of the backup floor drain or toilet. The issue of flooding also reported to experience as leaking and dripping through the basement. Less than half of the people who remember experiencing flooding do not have the collection whet they observed related to the flooding.

The participants reported the flooding they have experienced have not related to the outside weather. Thus most of the flooding occurred in a sunny, dry days. Most of the participant who reported their flooding experience reported that they do not remember the actual date of the flooding. Within the house the ground floor is reported to be where most flooding occurred, and most of the flooding not caused property damage. Only 15 percent of the participant who reported experiencing flood reported that the flood caused the property damage.

None of the flooding reported to be happed within the past one year. 69 percent of the participants who reported to be experienced the flooding reported that the flooding occurred once or twice in the past five years. 3 participants reported the flooding they experienced has not been with the past five years, whereas one participant reported to experienced three to five time within the past five years. When asked who are affected by the flooding they experienced most of the participants reported they have no knowledge if other person has affected by the flooding other than their family. And only two participants reported that the flooding also affected their neighbors too.

All the flooding has been reported to the managers or the property owner. And more participants reported that they flooding water include sewer which they understood by its color or its smell. Nine out of the 13 participants who reported experiencing flooding reported that the issue been inspected and fixed whereas four of the participants reported to not remember if it was inspected, they only reported that the issue was fixed for them. After the initial trial to fix the problem four out of the thirteen participants who reported to be experiencing the flood has reported that they issue re occurred after the initial trial from the same location, two people reported that the flooding occurred in different location than the first place. Less than have of the people who experienced flooding report to having the knowledge of the drainage improvement work done on the property. According to the response to the survey the work done was successful to prevent the problems.

Report on outside building flooding

When it comes to the outside of the building experiences the response was shifted to more positive. 22.6 percent of the participants are reported that they experienced or seen flooding outside of their house of their outside of the office or within few blocks of their house of working place. Twenty one participants said they saw that the flooding occurred in the side walk close to their home, and 61 participants said they saw the flooding on the drive ways. The locations of these flooding are occurred in Columbia, Rainer Vista, New Holly and Rainier Beach. The participants experienced the flooding during the raining or after the rain.

Most of the flooding was estimated to be within the one to 6 inch deep, 6 to 12 inch and more than 12 inches deep. The participants reported the flooding lasted for 1 to 6 hours. However, most of them reported that they do not get a chance to go back to see after once they saw on their way, next time they came back on the same place the flooding was not there. Most of the flooding was reported to be the size of the roadside puddle, or flooding into street. From the survey the flooding was not identified whether it has sewer.

Surfacing Ground Water

Additionally, the participants were asked if they were seen any water in the street within few blocks of their house when it was not raining, most them reported that they did not seen water when it was not raining, only 1.2 percent of the total participant responded to have seen water on the street when it was not raining within few blocks of their residence area. The participant mentioned seeing what clean water wetting the sidewalk and the street seems. They also mentioned that the water coming out of the sewer inlets.

The participant mentioned that they haven't seen any algae or ice within the air of where they found water on street. They reported that they have seen water coming out of the water inlet on the street, running to the street and the sidewalk from the grass next to the street, and most commonly it was reported the participants did not identified the sources of the water, by they notice the water. None of the people reported to restricted access to their property due to the standing water or the flooding. 211 participants reported living more than 5 year to their current address, 115 reported that they have been t the current address for three to five years. 33 participants reported that they are living in the current address for one to two years, and 21 participants reported they have been at the current address for less than a year.

Side Sewer

From the analysis of the survey result only 7.4 percent of the participants own the property where they are currently leaving. All the home owners reported that the call sewer pipes for the pipes that carry house hold wastewater to the city's main sewer system. All the home owners are aware that they are responsible for the maintenance and repair of the pipe that connects their house to the main sewer system. However, they said they do not have where it their side located.

Most of the participant who owns property said they have their sewer system inspected in the past. They also mentioned that they did not need the inspection just because they need to

inspect it, that inspection was done during the property purchase and as an extension of repairing. More than half of the home owners mentioned they did not need to inspect their pipe system. Those who have their home sewer pipe cleaned mentioned that they needed to do so because of the suspected blockage and remodeling their house.

Those who reported that at any time in the past five years experienced the sewer damaged or broken reported that the main issues were causing that items blocking the pipe, and few part the age of the pipe was also reported. Most people mentioned that they prefer that to repair their sewer pipe when it fails other than having it routinely inspected. About half of the home owners reported that coupons and discounts may encourage them to have their home sewer pipe inspected and cleaned.

Question by Question Response Analysis

1. Have you ever experienced flooding in your home or work place?

| Yes | No |
|-----------|------------|
| 13 | 367 |

2. What did you observed?

| Backup through floor drain or toilet | Leaking and dripping into basement | Burst water pipe | I don't know |
|--------------------------------------|------------------------------------|------------------|--------------|
| 6 | 4 | 0 | 3 |

3. Do you remember when the flooding occurred?

| Date | Year | Season | Weather |
|----------------------|------|---------------------------|--------------------------|
| 5 - Not known | | 2 spring, 1 winter | 5 -Sunny, Dry out |

4. Where did the flooding occur? Please check that apply.

| Ground floor | Basement | Living space |
|--|----------|-----------------------------|
| 7 total, 3 bed room, 3 leaving room, 1 corridor | 3 | 2nd floor |

5. Did flooding caused property damage?

| Yes | No |
|----------|-----------|
| 2 | 11 |

6. How many times flooding occurs in the past year?

| |
|---------------------------------|
| Not within the past year |
|---------------------------------|

7. How many times has the flooding occurred in the past five years?

| | | |
|---------------|---------------------|--------------------------------|
| Once or twice | Three to five times | Not within the past five years |
| 9 | 1 | 3 |

8. To your knowledge, this is the issue that affects

| | | |
|-------------------|---|--------------|
| Only our property | It is also an issue with near bay neighbors | I don't know |
| 7 | 2 | 4 |

9. Did you report the problem?

| | |
|-----|----|
| Yes | No |
| 13 | 0 |

10. Do you know if the flooding water on your property included sewage (due to sewage odor, visible signs of sewage)?

| | |
|---|---------------------------------|
| Yes (please answer the following questions) | No (please skip to question 11) |
| 9 | 4 |

If yes, have you had the issue inspected, or has there been any work done to prevent backups (backflow preventer valve, etc.)?

| | |
|-----|----|
| Yes | No |
| 9 | 0 |

If work was done, was the work successful? Have you had problems since?

| | | |
|--|--|---|
| Work was successful, no problems since repairs | Work was not successful, the problem has re-occurred | Work on the original flooding problem was successful, but there are new flooding problems |
| 3 | 4 | 2 |

If no or if you don't know, (to Q.10) have you had the issue inspected, or has there been any work done to prevent backups (drainage improvements)?

| | |
|-----|----|
| Yes | No |
| 4 | 0 |

If work was done, was the work successful? Have you had problems since?

| | | |
|--|--|---|
| Work was successful, no problems since repairs | Work was not successful, the problem has re-occurred | Work on the original flooding problem was successful, but there are new flooding problems |
| 4 | | |

Outside the building

11. Is there flooding in the street in front of your home? In other locations on your street? Within a few blocks of your home?

| | |
|-----|---------------------------------|
| Yes | No (Please skip to question 18) |
| 86 | 294 |

12. Where have you seen flooding in the street or sidewalk near your home? Please describe in as much detail as you can, including nearby intersections, streets or landmarks.

21 of the response were on the side walk with few blocks to the participant’s house. None of the participants put the address/interception. Since their residences are in Rainier Vista, and New Holy.

65 of the participants reported flooding on the street.

13. Do you remember when the flooding occurred? Please describe in as much detail as you know, including date, month, season and year.

All the season was reported to be in winter, it is reported that most of the flooding occurred during the rain or after the rain

14. How deep was the flood water?

| | | | | |
|-------------------|------------------------|------------------------|---------------------|--------------|
| Less than an inch | Between 1 and 6 inches | Between 6 to 12 inches | More than 12 inches | I don’t know |
| 0 | 29 | 26 | 6 | 25 |

15. How long did the flood last?

| | | | | |
|----------------|-----------------------|---------------------|--------------------|--------------|
| 1 hour or less | Between 1 and 6 hours | 6 hours to 24 hours | More than 24 hours | I don’t know |
| 3 | 6 | | | 71 |

16. How large of an area did the flooded area affect?

| | | | | |
|-----------------|--------------------------|-----------------------------|---------------|--------------|
| Roadside puddle | Flooding into the street | Flooding of an entire block | None of these | I don’t know |
| 37 | 41 | 0 | | 8 |

17. Do you know if the flooding water **on the street or sidewalk** included sewage (due to sewage odor, visible signs of sewage)?

| | | |
|-----|----|--------------|
| Yes | No | I don't know |
| 0 | 12 | 74 |

Surfacing Ground water

18. Are there places in front of your home, on your street or within a few blocks of your home where you see water when it is not raining?

| | |
|-----|---------------------------------|
| Yes | No (Please skip to question 21) |
| 6 | 374 |

19. Where have you seen standing water in the street or sidewalk near your home when it is not raining? Please describe in as much detail as you can, including nearby intersections, streets or landmarks.

The most common answers are:

- What seems clean water comes out of ground and made the street and side walk wet.
 - Water coming out of the drainage inlet and flooding on the street
 - Water coming out from next to the side walk, very steady flow

20. Do you ever notice any of the following in these areas? **Please check all that you've seen.**

| Green algae | Ice | Other please describe |
|-------------|-----|---|
| 0 | 0 | <ul style="list-style-type: none"> Come out from WWD system (1) Come out from grass by the side street (2) From directly on the street an identified source (3) |

21. Does flooding or standing water block access to your property, or affect safe movement of people walking or driving? **Please check all that apply.**

| | | |
|-----|----|--------------|
| Yes | No | I don't know |
| 0 | 6 | 0 |

22. How long have you lived or worked at your current address?

| Less than a year | Between 1 and 2 years | Between 3 and 5 years | Longer than 5 years |
|------------------|-----------------------|-----------------------|---------------------|
| 21 | 33 | 115 | 211 |

Side Sewer Questions

23. Do you own the property?

| Yes, I am the property owner | No, I am not the property owner |
|------------------------------|---------------------------------|
| 28 | 352 |

If yes (property owner), please answer the following questions

24. Your home has a system of pipes that carry household wastewater to the City’s main sewer system. What do you currently call your home’s wastewater pipes? (Multiple choice)

| Sewer pipes | Side sewer | Nothing; I did not know the name for the pipes | Other: please specify |
|-------------|------------|--|-----------------------|
| 28 | 0 | 0 | 0 |

25. In Seattle, each homeowner is responsible for the maintenance and repair of the pipes that connect their home to the main sewer system. Were you aware of this?

| Yes | No |
|-----|----|
| 28 | 0 |

26. Do you know where your side sewer is located? (if it has side sewer)

| Yes | No |
|-----|----|
| 0 | 28 |

27. Have you ever had your home’s sewer pipes inspected?

| If Yes: When? | This year | Last year | Some time in past five years ago |
|---------------|-----------|-----------|----------------------------------|
| | 2 | 1 | 9 |

If NO: Why not?

| Cost | Time | Low on priority list | It never occurred to me | Other specify |
|------|------|----------------------|-------------------------|---------------|
| 0 | 0 | 0 | 16 | |

28. If you have ever had your home's sewer pipes cleaned, why did you have this done?

| Root growth | Blockage | Was doing work/reconstruction/home remodeling | Was putting the house up for sale | Other: please specify | I have not had my sewer pipes cleaned |
|-------------|----------|---|-----------------------------------|-----------------------|---------------------------------------|
| 0 | 9 | 3 | | | 16 |

29. If you have experienced a damaged/broken sewer pipe, what caused the damage?

| Roots | Age of pipe | Item blocking pipe | Construction /remodel error | Unsure | Have not experienced a damaged/broken sewer pipe |
|-------|-------------|--------------------|-----------------------------|--------|--|
| 0 | 3 | 9 | 0 | | 16 |

30. Sewer pipe repair can often be avoided by having your home's pipes inspected and cleaned every one to five years, depending on site conditions. What, if anything, would motivate you to have your home's sewer pipes inspected/cleaned more often?

| Periodic reminders from SPU | Coupon for scoping/cleaning services | Information about sewer repair costs from SPU | Other: please specify Prefer repair when it fails |
|-----------------------------|--------------------------------------|---|--|
| 0 | 11 | 0 | 15 |

Demographic questions

31. What is your age?

| Under 18 | 18-29 | 30-44 | 45-59 | Over 60 | Prefer not to answer |
|----------|-------|-------|-------|---------|----------------------|
| 21 | 41 | 187 | 83 | 13 | 35 |

32. Which gender do you identify with?

| Female | Male | Transgender | other | Prefer not to answer |
|--------|------|-------------|-------|----------------------|
| 72 | 265 | 0 | 16 | 27 |

33. What ethnic group do you consider yourself a part of or feel closest to?

| African-American/Black | American Indian | Asian-American | Latino | White/Caucasian | Other |
|------------------------|-----------------|----------------|--------|-----------------|-------|
| 363 | | | 3 | | 17 |